

JAMES W. TUFTS



SODA WATER
APPARATUS



BOOK OF
DIRECTIONS



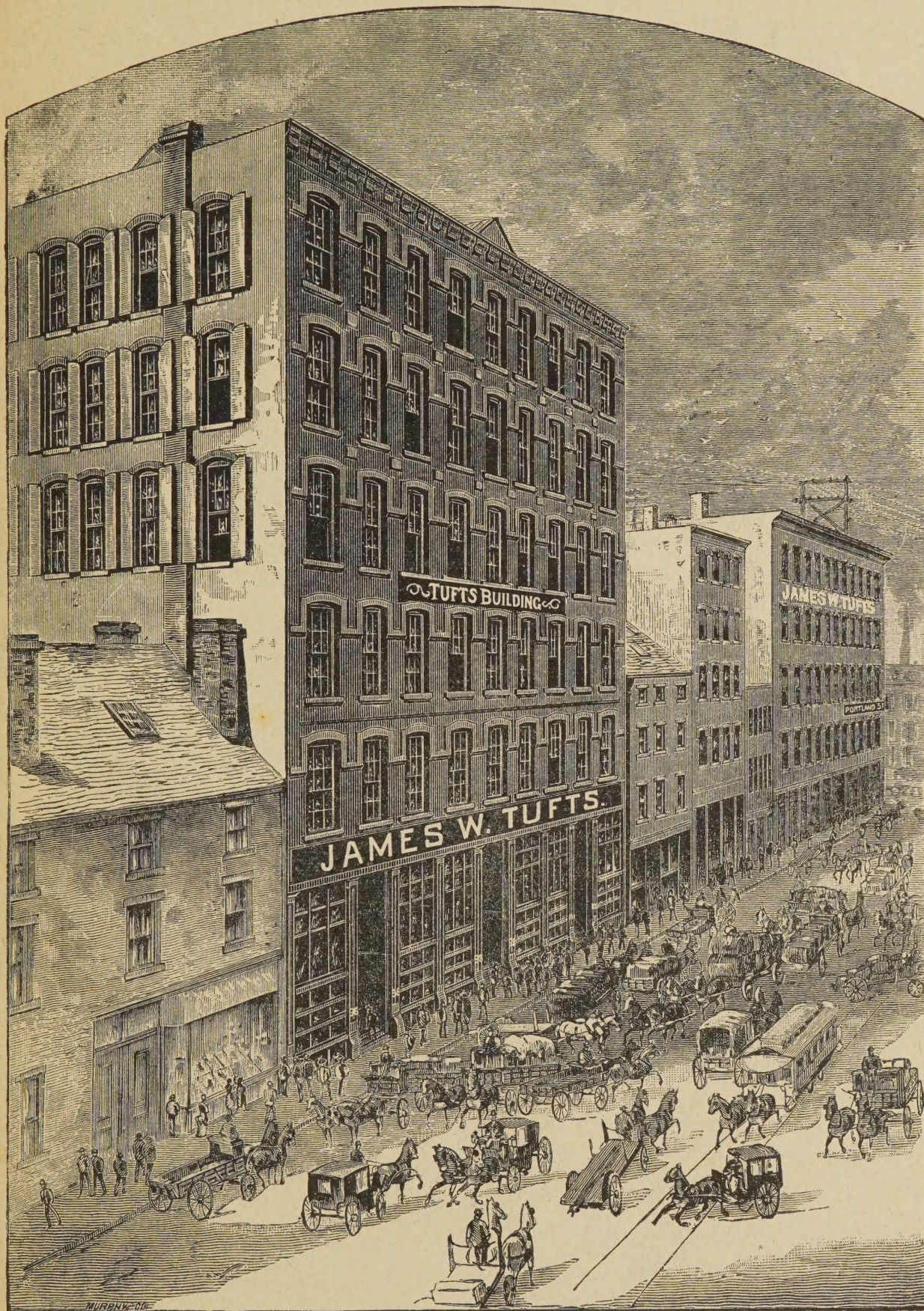
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JAMES W. TUFTS.

ARCTIC SODA-WATER APPARATUS.

BOOK OF DIRECTIONS.



PORTLAND STREET FRONT OF FACTORY.

SALESROOMS.

NEW YORK,
10 Warren St.
(Near Broadway and City Hall.)

CHICAGO,
84 & 86 Jackson St.

ST. LOUIS,
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BALTIMORE,
Cor. Lombard and Concord Sts.

SAN FRANCISCO,
54 Second St.

NEW ORLEANS,
356 Chestnut St.

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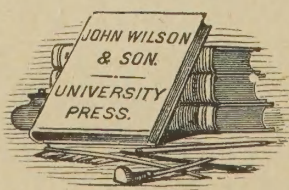
MINNEAPOLIS,
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CATALOGUE.

To parties about to engage in any branch of the soda-water business, my full illustrated catalogue and price-list will be sent free, by mail, upon application.



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INTRODUCTORY.

To Dispensers, Bottlers, and Manufacturers of Carbonated Beverages.

I HAVE endeavored in the following pages, not only to give full directions for setting up and operating all the various styles of apparatus of my manufacture, but have added receipts for all standard syrups, and have, from time to time, incorporated such receipts for new drinks as I learn of from my large list of patrons. In making up this Book of Directions, I have been obliged to make such division and arrangement of matter, pertaining both to dispensing and manufacturing, as best I could, and I would suggest that in all parts may be found some facts that will be of special interest to both classes, and therefore urge a careful reading of the whole of this book upon all branches of the trade.

The rapid and increased demand for bottled carbonated beverages is a sure indication that the soda-water business, in this branch, though immensely greater than a few years since, has only begun its growth, and that in the future more pains will be taken to improve the necessary machinery for their proper production than has yet been given.

I have endeavored to give, in as plain a manner and as thoroughly as space will permit, such directions and formulas as I know to be desirable.

Should the reader fail to find sufficient information as to prices, &c., I will with pleasure mail him my full Catalogue, which will supply all that may be lacking here.

I am always pleased to give any information in my power pertaining to the soda-water business; but my customers can, in many instances, save themselves trouble and delay by searching diligently in this book for the information they require.

I aim to make only one class of goods, and that the best, and can safely guarantee every article of my manufacture.

SUGGESTIONS.

THERE is no business in which a merchant can engage which yields so large a return on the investment, as the dispensing of soda-water.

This fact has become well known, and with it another fact, viz.: that there is no means of advertising a soda-water business to be compared with a large and attractive apparatus.

The dealer must not imagine, however, that having purchased and placed in position a fine apparatus, he has done all that is necessary. This is far from being the case; he has in fact but taken the first step.

The art of manufacturing and dispensing carbonated drinks has at present reached a point which requires education and skill. The public have been taught to know and appreciate a good drink, and to look for prompt service and perfect cleanliness and neatness.

An attractive apparatus cannot be excelled as a means of drawing customers into your store; but in these days of hurry and rush, the assurance of prompt attention which is conveyed by the appearance of the soda-water clerk, in his clean white coat, standing at the apparatus ready to instantly serve whatever may be demanded, is not to be overlooked.

The most patient man is in a hurry when he wants a drink, especially on a hot day.

There is nothing about which a person cares so much for cleanliness, as that which he drinks.

Clean marble, polished silver, shining glasses, clean towels, and a clean coat on the attendant, are indispensable.

The apparatus should be cleaned, the marble rubbed, and the silver polished daily. This should be the first duty of the attendant. There should be plenty of glasses, and running water in which to rinse them.

It is very necessary that the tumblers should be washed in view of the customer, as there is always a suspicion as to the cleanliness of a tub or sink under the counter. A tumbler washer of some form is a really necessary accessory.

Even the utmost cleanliness, added to attractiveness and promptness, will not compensate for the lack of a fine drink and plenty of it.

The beverage should be as near perfection as good material, care, and skill can make it, and it should be dispensed with a liberal hand.

Always let off the gas by means of the gas-cock when a fresh fountain of soda-water is attached, and also occasionally during the day, as the gas often gets ahead of the water, particularly when soda-water is drawn rapidly.

There is so little to be saved by using cheap extracts that no reason exists for using them.

The syrup should be heavy and, as far as possible, flavored with fruit juices. There is ample margin in the business to admit of using the best material. The cost of a glass of the best soda-water with fruit juice and cream (soda-water being reckoned at \$1.50 per fountain), including a pound of ice, is two and one quarter cents.

A small dealer in a town in the suburbs of Boston, who has for years doubted whether five-cent soda-water paid, kept a strict account through last season, at the suggestion of one of my salesmen, and the result surprised him. Including ice, repairs, and cost of attendance, his profits were 50 per cent on his sales, or 100 per cent on the cost.

If this can be done in a small business, it is at once apparent that in a large business, where many economies are possible, the percentage of profit will be much larger.

The importance of employing a soda-water clerk who thoroughly understands his business, should not be overlooked.

There is as much difference in the soda-water drawn by different clerks as in the bread made by different women.

The manipulation of drinks can be made attractive. Of recent date many delicious drinks have been introduced which contain milk, or cream, or egg. These can be wonderfully improved by thorough shaking. This is easily demonstrated by tossing from one tumbler to another a glass of soda-water with cream, drawn in the ordinary manner.

The saloon-keeper appreciates the fact that manipulation is attractive, and pays high wages to a skilful bar-tender. The dispenser of soda-water can take the hint.

If shaking drinks is thought suggestive of the bar-room, this objection can be entirely obviated by the use of a shaking machine.

To the objection which may be raised as to the expense entailed by the employment of a soda-water clerk, I would answer that it is cheaper to do a large soda-water business than a small one.

Suggestions for Users of Small Apparatus.

THERE are three essentials for obtaining a good trade from the Arctic, — ICE, GOOD SYRUPS, CLEANLINESS AND NEATNESS ABOUT THE STORE, particularly in regard to the tumblers and Apparatus.

Keep the ice-box well supplied. The ice should be broken very small. A convenient way is to place it in a stout bag, and beat it up with a mallet made of oak, with a long handle *in the end*; or the use of an ice dealer's chisel will be found convenient. A bit of blanket or carpet spread over the ice in the Apparatus will save a large percentage of the ice. As the ice melts away from the coolers, it should be occasionally shaken down with a stick.

The syrups that I recommend I know from experience to be excellent; and I hope all who use the Arctic will at least give them a trial.

The pine-apple juice prepared as I have directed retains its flavor for years, and it has seldom given me trouble by fermentation.

Vanilla is a flavor that some dealers think they must *economize* on, and so use Tonka beans. I would as soon flavor syrup with assafoetida. Prepare your own extracts, particularly vanilla, as the extracts sold for vanilla are seldom genuine; and if you can't afford to make good syrups, leave them off your list.

LEMON SYRUP. Allow me to make what I consider a valuable suggestion: Unless you make from the fruit, or sell all that you mix within twenty-four hours after it is mixed, flavor each glass of soda-water as you sell it, by shaking one drop of extract of lemon into the glass. The oil of lemon, when mixed with the syrup, turns bitter and musty in a few hours. By flavoring your acidulated syrups when you sell the glass of soda-water, it is sure to be nice. *Try it.* It is no trouble. Keep it in an essence bottle with a squirt top, or in a phial, with a little notch cut in the side of the cork. One drop is all that is necessary for a glass of soda-water. The same applies to orange. Be careful to obtain fresh oils of lemon and orange, *and dissolve them in alcohol immediately.*

It is an excellent way with a small Apparatus, to have a plain syrup and a plain cream syrup; then by using essence bottles or phials of flavors, as I have suggested for the lemon, the syrups are readily prepared, and are as good as can be.

Finally, in regard to neatness. Your friends and customers notice the appearance of your store in regard to its neatness, perhaps more than you do. Another dealer in soda-water may take a good proportion of your trade away from you by keeping his store looking more attractive. The best way is to make an invariable rule to have the Apparatus "polished up" every morning. Also have the tumblers washed with hot water and soap at the same time; then, if you have not a tumbler-washer or running water, have a clean tub under your counter, which should be replenished with water, and scrubbed with a brush, two or three times a day. Rinse out your tumblers (particularly when you have had cream syrup in them) before washing them in the tub. Use clean towels, and *keep* things looking nice during the day.

I have spoken very forcibly about these things (I wish I could speak more so), for there is no mistake about it, those who will take pains to have ice in plenty, to make good syrups, and keep the store looking wholesome, will find their account of it in the very large addition to their receipts from the soda-water counter.

HOW TO MAKE THE SODA FOUNTAIN PAY.¹

By Howard S. Eckels, Philadelphia.

WHY, *make* it pay?

Mine pays me; and my monthly profits therefrom, during the heated term, far more than counterbalance the losses resulting from the usual exodus of patrons to Europe, the shore, or the mountains.

How do I make the fountain pay?

Let me tell you in the form of a few suggestions (the paid for fruit of long experience followed by a permanent and gratifying success).

Primarily, I will state that my net profits on last Sunday's sales alone, — the trade hours between, say, 10 A. M. and 11 P. M., — on South Broad Street, Philadelphia, were \$23.65, selling plain soda or cream soda with syrups at five cents, and ice-cream soda at ten cents per glass.

And now the suggestions. Have —

1. A wisely placed fountain, as cheap or as costly as you may choose, provided it be artistic in design, — therefore attractive in appearance, — and perfect in its workings and appliances.

2. The finest grade of soda-water, in conjunction with "Saratoga," "Vichy," "Deep Rock," "Lithia," etc., many, especially men, preferring mineral waters, *au naturel*, to the sweeter and richer beverages.

3. Have all your waters constantly at a uniform temperature, say thirty-two degrees.

4. A most essential point, — the finest *genuine fruit* juices obtainable.

5. Have as attendant, one comparatively young in years and prepossessing in appearance, endowed with tact and limitless good nature; one ever bland, even while serving the "crank," the peevish hypochondriac, the "eccentric," or the arrogant snob or upstart with more wealth than wit, more conceit than breeding; one who can gauge his patrons, male or female, octogenarian or "totsy," and shrewdly suggest this, that, or the other thing to a fretful or puzzled inquirer; one deft in hand, nimble in brain, quick in perception, swift in execution.

6. Regard as an unpardonable crime the slightest deviation from perfect cleanliness in every detail. Over *your* counter, at least, you need not let your patrons consume any of their share of the proverbial peck of dirt. Have a spotless counter, free from dust, stickiness, and moisture; every inch of plated work shining like a coin fresh from the mint, every faucet glittering, every space of marble as lustrous as onyx, every glass shining like virgin crystal, every holder thoroughly buffed and polished.

¹ Hance Bros. & White Prize Essay.

7. Use "juices" only for syrups, avoiding "extracts," "essences," etc., once served up in the infancy of the soda-water business, but now generally relegated to second-rate confectionery shops, bar-rooms, and the circus shows.

8. Always have on hand plenty of tumblers, thin and dainty; never — in his or her presence — giving to one patron the glass used by a previous customer; for you will remember that men wear mustaches, that men smoke, chew tobacco, and drink alcoholic liquors, and that both men and women are only too often afflicted with disorders, more or less unpleasant or malignant, of both the lips and the mouth; and many of your patrons, while refraining from expressed criticism, might take their nickels and their trade to that dreaded rival, who will only too gladly tender a cordial welcome.

9. Have a goodly number of light and comfortable chairs in the vicinity of your fountain, many, especially elderly people and convalescents, desiring or needing a moment's rest while quaffing the wholesome and delicious beverage.

10. (And highly important.) Have in your window such signs, notices, etc., as will attract favorable attention, many people (though not at all times and without a timely and refreshing hint) properly realizing the wisdom of refreshing themselves with "Soda at Freezing Point!" "Pure Fruit Juices," etc.

11. Have always on the counter a supply of small and dainty napkins; such cost little to buy and less to have washed, and constitute an additional temptation to customers to continue their patronage, prevent the soiling of handkerchief, the staining of coat or gown, and add character and "tone" to your establishment.

12. Play the miser in spilling and slopping syrups, waters, or cream; play the prodigal in your use of ice, and charging your water.

13. Keep your whole establishment, as well as your fountain, so that neither fly nor roach shall find a welcome feast on bottle, table, floor, or corner. Your customers don't purchase fly speck, or roach trails, and there's no profit in keeping unsalable goods. Maintain this place of yours in such a style that the gloved hand of the society dame or demoiselle, or the broad-cloth cuff of the "dude" or "exquisite" may not serve as a rag, a mop, or an absorbent of stickiness, dust, or stale liquids.

14. Never, when obtainable, be without the daily morning bunch of fresh flowers as a pleasing and odoriferous adjunct to your counter. The cost is trifling through the summer months, the effect is good; and a bright clerk may many a time gratify a patron, young or aged, by a well-timed and "canny" present of a modest boutonniere. Little favors, graciously and wisely tendered, oft bring large results.

15. Keep the cream and juices cold, as cold as you can, for obvious reasons.

DIRECTIONS FOR SETTING UP ARCTIC AND SIBERIAN DRAUGHT APPARATUS.

THE Slab upon which the apparatus is to be placed should have a suitable hole through which to pass the pipes. For the lighter styles the hole should be six inches in diameter, placed about the centre of the position that the apparatus is intended to occupy.

For the larger and heavier apparatus it is advisable to have an eight or ten inch hole, to afford facility for making connection with the pipes without lifting or moving the apparatus. For large wall apparatus the hole should be oblong, twelve to twenty inches lengthwise the slab by ten inches crosswise.

The slab for the Siberian style differs from that of the Arctic. To cut a hole suitable for the Siberian Arctic, first, measure off the space that the apparatus will occupy on the marble slab, find the centre of the space measured and draw a line across the slab at that point, thus dividing the space into two equal parts. Cut an oblong hole eight inches long by six inches wide to the right of the dividing line, the CENTRE of the hole should be eight inches from the edge of slab at the back of the apparatus. The back of a counter apparatus is the side opposite the front, or side containing the faucets, not the side next to inside of counter. For a wall apparatus the rear edge of slab should be finished square and need not be polished.

Carefully remove the apparatus from the case and place it upon the counter. If it be one of the lighter styles, it may be turned over sufficiently to connect the supply-pipes with the couplings underneath the ice-case. Pass the rubber drain-pipe through the hole in the counter.

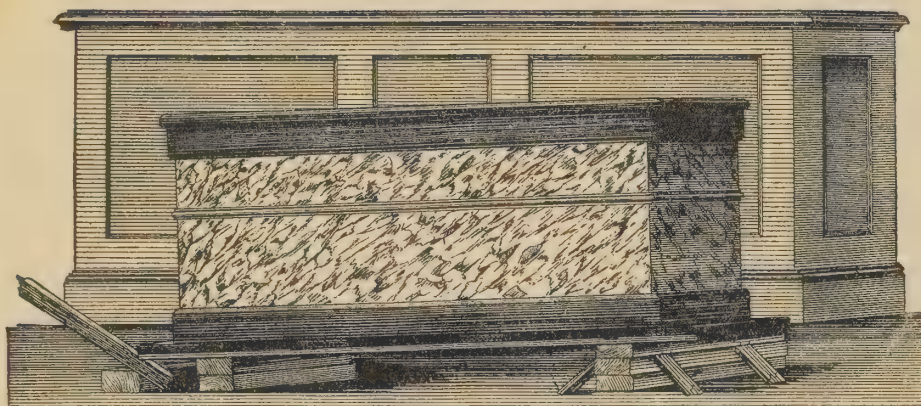
The Siberian style has two rubber drain-pipes,—a large one from the ice-chamber and a small one from the syrup-chamber. Both should pass through the hole in counter.

Heavy apparatus, or those having a base moulding, should not be turned over on the edge, as it is liable to splinter the marble. If the hole in the counter slab be not sufficiently large to make the connections through, the apparatus should be raised upon blocks or boxes while the pipes are being attached.

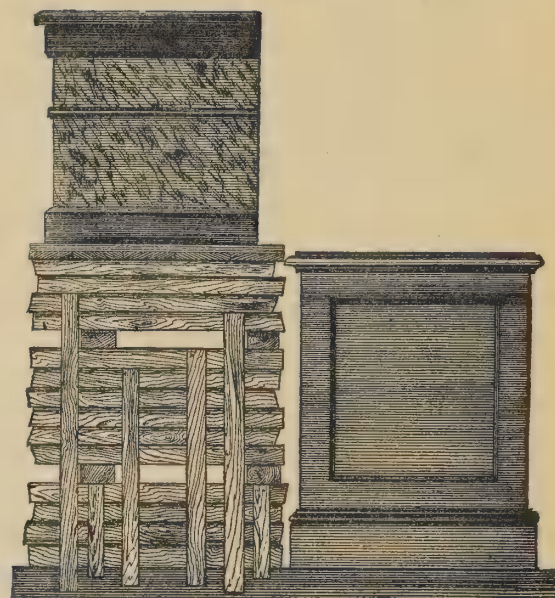
Extremely heavy apparatus are placed upon a plank base inside the packing case. To get them in position, the apparatus with the plank base should be blocked up with joists to a level with the counter slab.

The method of blocking is shown by illustrations. The lever used may be a piece of joist or plank. The apparatus should be raised very gradually, not more than two inches at a lift, and the blocks upon which it is raised

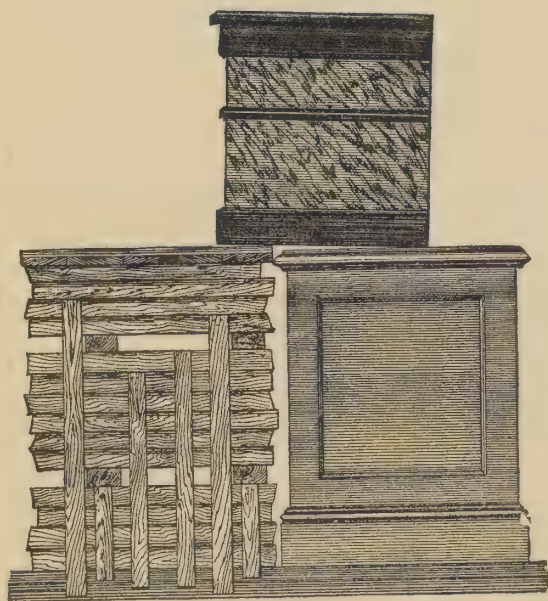
should be nailed to the floor or fastened by stays, so as to avoid liability of toppling over. If there is not sufficient room in which to operate a lever, the use of jack-screws, such as are used by builders, can be substituted. The slab should then be covered with a strong, heavy packing-paper, and



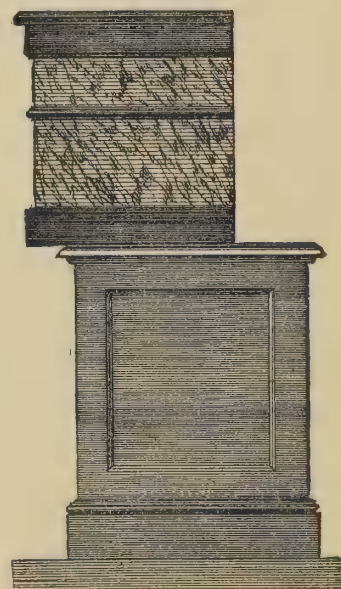
Apparatus partially raised up on blocks.



Apparatus raised up high enough to push it on the counter.



Apparatus pushed on the counter far enough to support itself.



Apparatus resting on the counter after the blocks are taken away.

the apparatus slid from the base upon it. When the apparatus is moved far enough on to the counter to be self-supporting, remove the blocking and base on which it is packed, to avoid liability of breaking corners or loosening base moulding; after which slide the apparatus into position. The paper may then be carefully trimmed off with a sharp knife. When the marble is in position, connect the draught-tubes and the gas-cock. Turn up very firmly the check-nuts that hold the draught-tubes in position.

Directions for Removing Syrup-Cans and Faucets from the Arctic with Block-Tin Cans.

IF necessary to tighten the ice-case, or fasten the syrup-faucets in position, turn up the nuts on the syrup-faucets against their washers in the ice-case. To tighten up the connections between the syrup-faucet and syrup-cooler, turn up the nut as an ordinary coupling.

To remove a can, simply uncouple it from the syrup-faucet and allow the faucet to remain in position. See that there is a suitable washer in the coupling when it is replaced. The glass syrup-jars, furnished in the Arctic when so ordered, are held in place by the side rods, the lower ends of which screw into the faucet connection. The upper ends pass through the top plate, and a tight joint is made by means of two thumb screws. If the syrup-faucet is removed, be particular to attach to the faucet a *tightly fitting* washer on the inside of the case before putting on the nut.

The syrup-faucets of a hexagonal apparatus should only be removed when necessary, as it is difficult to replace them. The flanges or bushings placed between the marble and the ice-case cannot be soldered to the case, and are, therefore, displaced whenever the faucets are taken out. If, however, the faucets be removed, the ice-case will have to be taken out, and the faucets corresponding with the detached bushings placed in position, with enough projection inside the marble to suspend the bushings upon. After the bushings are suspended on the faucets, the ice-case should be replaced, and the faucets passed into it. This brings the bushings into position, and gives the necessary bearing for the check-nuts.

The syrup-faucets of the Ideal and the Sovereign, especially, should not be removed, as the ice-case can only be taken out and replaced by an experienced workman.

Directions for Setting up the Alaska.

THE directions are the same for attaching the supply-pipes from the fountain to this apparatus as to the Arctic, when it is placed in position.

The attachments of the Alaska are readily understood.

The syrup-faucets are connected with the syrup-jars by means of short pieces of rubber tubing.

The cans are kept in an upright position by means of the partition between them and the ice-case, and also by the wires attached to the front part of the ice-case.

To connect the draught-tube, it is necessary to remove the partition, first being careful to have wires in position to prevent the glass jars from falling over, and consequent breakage.

After removing the upper section of the partition, access is obtained to the coupling-nut by allowing the two adjoining cans to lie back against the coolers.

To remove a can, take out the upper section of the partition; disconnect the pipe from the draught-tube, also the inlet or supply-pipe where it is attached to the cooler; take out the coolers; remove the lower section of the partition; and then carefully lay back each of the cans in the ice-case; this gives free access to the rubber tubing.

The ice-case is made tight, where the syrup-faucets pass into it, by means of leather washers, which it is essential should be cut from thick leather, and fitted tightly to the screw of the syrup-faucet by screwing the leather on in the manner of a nut.

The syrup-faucets are the same as those used in the Arctic.

The draught-tube is a simple arrangement, having but one washer, which may be removed, and renewed with a piece of calf-skin or rubber cloth, as directed for "Small Draught-Tubes" in the Arctic, by unscrewing the nut through which the wheel passes.

Directions for Hinging the Covers of the Cottage.

REMOVE the screws on the top of the fountain, and lay the two pieces already hinged in place, fastening completely with the screws.

Lay the wide cover on the fountain. Put the bolts through in their places and by turning up the narrow piece of the cover put on the nuts and fasten.

N. B. — The cover should always lie perfectly flat, and in no case be moved while hinging until the screws are tight.

Directions for Putting Cover on the French Cottage.

THE part of the cover marked **F** belongs to the front of the apparatus. Lay it in position and fasten securely with the screws. It should lie perfectly flat, and in no case be moved until the screws are tight. The part of bouquet-holder marked **F** belongs to the front half of the cover.

General Directions for Setting up Draught-Stands.

AFTER placing the apparatus properly on the counter, have the chucks beneath counter securely fastened, in order that it may stand very firmly. Trouble may be caused if the pipes are not marked to correspond with the name on the draught-tube; therefore, it would be wise to mark the couplings on pipe before attaching to fountain in order that the desired water may be

drawn from the right draught-tube. When it is desirable to renew the washers, use the small spanner-wrench which accompanies the apparatus, and unscrew the cap. Be careful that the milling is not touched by the spanner. By holding the implement firmly in the hand all injury to the plating will be avoided, and the cap will yield more readily. The washer is made a trifle large in order that the desired flexibility may be attained. See that the washer is wholly devoid of wrinkles or seams, particularly on the margin, as leakage may ensue if otherwise. When replacing the cap, be sure that the "cent piece" lies with the smooth side against the washer. A slight leakage may always be remedied by the use of wrench or spanner.

Directions for double-stream soda-water draught-tubes will be found elsewhere in this book; see pages 26 to 32.

Directions for Use of the Druggist Draught-Stand.

CUT two oblong holes in the counter, parallel to one another, twelve and one-eighth inches apart from centre to centre. Each hole must be twelve inches in length and three in width. Exactly in the centre of the space between these holes bore a round hole one inch and one-eighth in diameter, to allow the passage of the waste-pipe which runs from the marble tumbler-drainer. As this apparatus is very heavy and massive, its own weight serves as a clamp; therefore bolts and nuts beneath the counter are not needed.

To remove the washer from mineral draught-tube, unscrew the cap far enough to allow the easy withdrawal of the washer-holder, the holder being the knob-like projection at the base of the draught-tube. Pull out this holder, and the washer will be seen. By pushing against washer with the finger it easily drops out. In replacing washer, be very careful that the two holes are in a line with the length of the washer-holder; if otherwise, difficulty in drawing the stream will ensue. Insert washer-holder in base of cock; push it up so that the stops strike; screw down cap only tightly enough to hold washer-holder in place, and allow of the free motion of lever-handle.

To renew washer in the patent draught-tube, the easiest way to commence is to remove the statuette, globe, marble shelf, in fact, the entire upper part of the stand. In unscrewing caps, nuts, or any plated part, *never use a metal wrench; always use a wooden clamp*. When the upper part is removed unscrew the small round nut on the top of the pillar through which run the supply-pipes of the patent draught-tube. There is no necessity whatever of touching the other pillar, only be careful when removing the patent draught-tube that you do not accidentally strike the waste-pipe running through that pillar, as it may prove of some inconvenience when replacing the top of the stand. After the nut is removed, gently raise the stand and uncouple the

supply-pipes beneath the counter. This will permit the easy withdrawal of the pipes from the pillar, the patent draught-tube naturally coming with them. Then the operator has the tube in one hand away from the stand. Simply follow the regular directions for the patent goose-neck double-stream draught-tube, and there can be no trouble. In replacing the parts do just the reverse of the above. A distinctive feature of this stand is that it is next to an impossibility to put it together wrong. The operator in most cases will use but one way, and that way is always correct. As in all apparatus, cleanliness plays an important part. It is universally known that nothing discolors or stains plating so much as the action of the various salts used in the manufacture of mineral waters, therefore it is perhaps needless to direct the frequent use of the towel and suds.

Directions for the Congress Draught-Stand.

THIS Draught-Stand is shipped with its principal parts put together, and no difficulty will be found in setting it up. Cut four holes in the counter (as per drawing packed with the stand), to correspond with holes in black marble base. The centre hole must be recessed out a little, so as to allow the rim of the basin to drop in flush with the slab. The stand requires no fastening, its weight being sufficient to hold it in place.

In attaching the water-pipes, remember that the waste water from the water-jet supplies the basin, and attaches to its side. The overflow-pipe from the opposite side of the basin, is connected with the waste-pipe at the bottom, and this pipe should be connected with the drain. The supply-pipe for the water-jet, and the supply-pipe for the soda-water draught-tube, are both in the central pillar. Do not connect the soda-water with the water-jet, and *vice-versa*.

The largest cooler in the ice-case is the soda-water cooler, and it should be connected with the soda-water supply-pipe of the central column. The long supply-pipes having a female coupling on one end, and a clamp-joint on the other, are passed through the holes in the side of the ice-case, and the female coupling connected with the male nipple of the cooler. The clamp-joint is to be attached to the cock of a copper fountain.

For directions for the draught-tubes, see general directions for draught-stands, directions for two wheel double-steam draught-tube elsewhere in this book; see pages 12 and 30.

Directions for the Crescent Draught-Stand.

MAKE two holes in counter twelve inches apart, and two inches in diameter. Gather the pipes as closely as possible, and pass through the holes.

Directions for the Occidental Draught-Stand.

FOR each pillar make two oblong holes one inch by two inches in the counter, place the bases evenly over them; gather the pipes as closely as possible, and insert.

Directions for the Windsor, Dalmatian, Metropolitan, Albion, Delta, Palmetto, and Signal Draught-Stands.

BORE a hole in counter about four and one-half inches in diameter; gather the pipes in as close a bundle as possible, and insert them in the hole, letting the apparatus rest evenly on the counter.

Double-Stream Soda-Water Draught-Tubes on Draught-Stands.

DIRECTIONS for these tubes will be found elsewhere in this book; see pages 26 to 31. The head of the goose-neck double-stream draught-tube is generally used on a draught-stand.

Directions for Attaching and Operating the Index Draught-Stand.

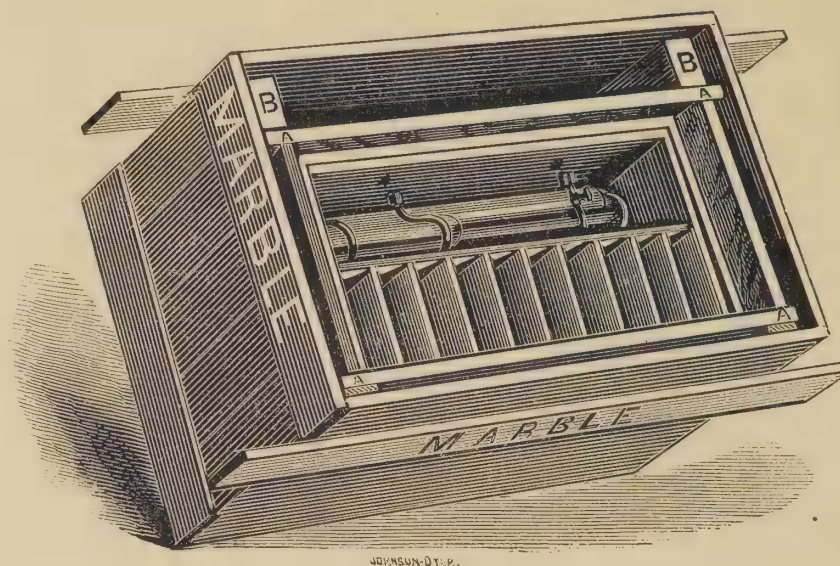
HOLES seven-eighths of an inch in diameter should be bored in the counter, one for every shank there is on the base. The stand is set on the counter, with the indicator, or tell-tale, at the back of the counter. Lock the stand to the counter with the check-nut, by the centre shank, which is also the drain outlet, leaving the outer shanks for connecting the waters.

Connect each water to be drawn to the shank directly under the number on the base that corresponds with the number on the end of the handle bearing the name of that water.

If water should continue to drop from the tell-tale, or indicator, at the back of the stand, tighten the large cap by screwing it down.

If it be necessary, at any time, to renew the washer under the valve, unscrew the knob on top of the wheel, pull out the key in top of spindle, unscrew the wheel from spindle, and then unscrew the large cap.

When either beverage is to be dispensed, the knob bearing the plate of the beverage is brought directly over the little tell-tale, or indicator, at the back, by turning the wheel in the direction of the arrows, and then turning it in the opposite direction until the water flows. No water will escape until the wheel is reversed.



DIRECTIONS FOR PACKING APPARATUS FOR SHIPMENT.

THE marbles in the apparatus I have taken in exchange, have in most instances been received broken, owing to improper packing. I have prepared the diagram shown above, to indicate how the case should be made and how the marble work should be placed in it.

Cleats should be screwed on the sides of the case, and should project as handles by which to carry it. The use of these handles, as shown in the engraving, is *essential*, as they at once indicate the frail nature of the contents, and prevent rough handling.

The pieces, **B**, are joists or double thickness of board 2 x 6 inches on the ends, and are as long as the height of marble under the cover. There should also be thin strips of wood at the back corners, as shown. It will be seen that this arrangement leaves a space in front for the protection of the syrup-faucets.

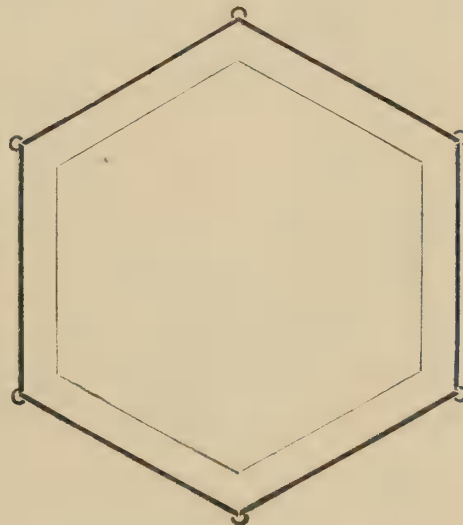
Breakage is usually caused by the bearing coming against the centre of ends or sides, and if an apparatus is packed in that way, whether with straw or other packing, it will in almost every instance be broken. Use no stuffing whatever about the ends or sides, or underneath the marble. If the bearing comes against the corners marked **A**, it will withstand considerable shock without damage. It should not, however, be wedged in, neither should it have much play.

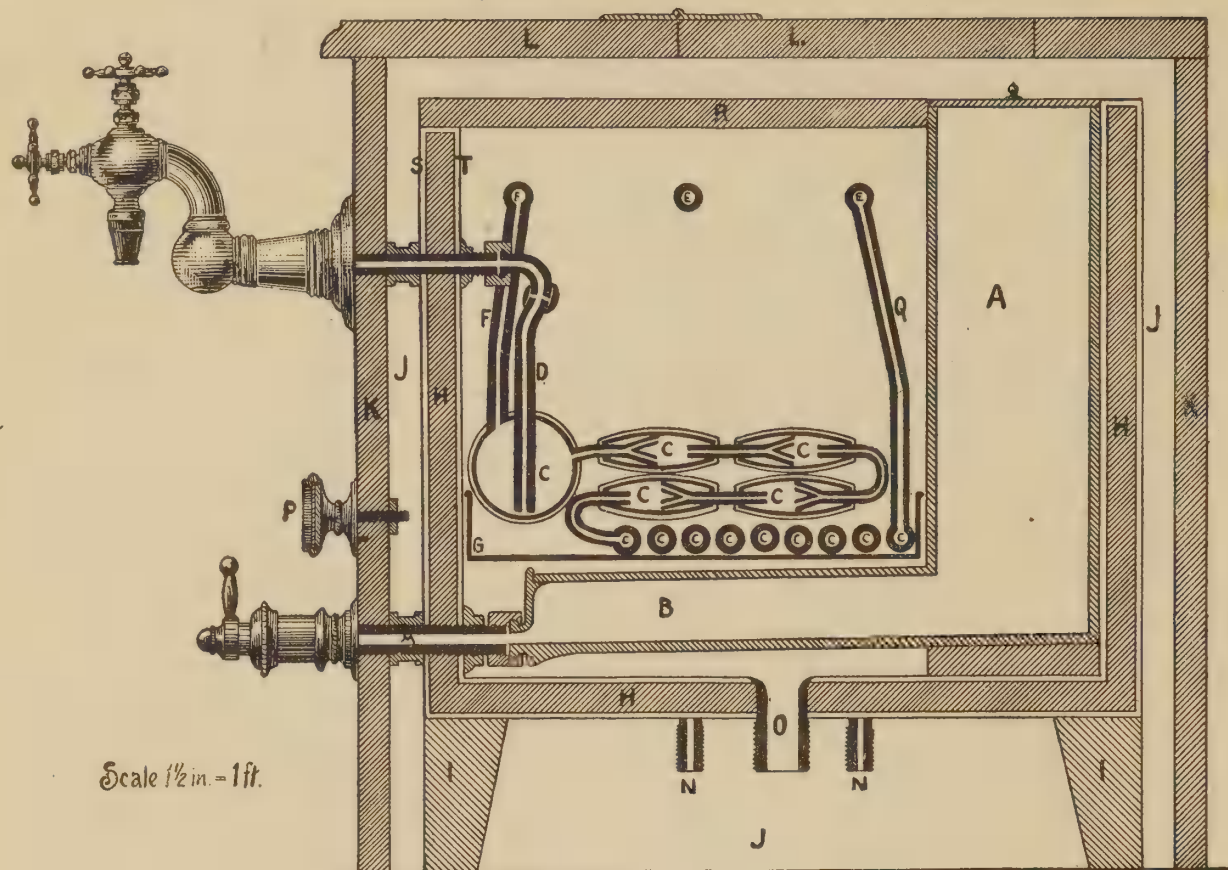
Most styles of marble can be packed as shown by diagram. The marble case should be covered by wood, and a layer of straw placed over it, in which the cover should be laid top down. It should then be loosely controlled to prevent sliding about. The case should be marked "Marble," in prominent characters on all sides and on top, and the sender's name should be marked on the case, that it may be identified. *Do not send the old counter slabs.* They are of no value whatever to me.

Directions for Packing the Zenith.

MAKE a packing case, somewhat larger than the apparatus, as follows: —

For a 15 syrup apparatus — 4 feet 2 inches high, 3 feet 2 inches long, 2 feet 10 inches wide, outside measure. For a 12 syrup apparatus — 4 feet high, 2 feet 10 inches long, 2 feet 6 inches wide, outside measure. On the bottom lay excelsior, straw or hay to the depth of about 4 inches. Place a false bottom — just to fit case — on top of this stuffing, and on top of false bottom nail securely a thick piece of board or plank, same shape but a trifle smaller than base of apparatus. Place the apparatus on this as in diagram below, in such a position that the corners or pillars shall not rest on the plank. On name-plate side of apparatus, put a brace across the box about 4 inches above base of apparatus (braces should be 2 x 4 joist). On opposite side put brace in same relative position, then across these put others, cob-house fashion, until apparatus is firmly secured in place. The case should be made open so that it can be seen to contain marble. Mark the top "This Side Up!" and always be careful to put the name of the sender upon the case that it may be known from whom it comes. Mark the case "Marble" on all sides prominently. Be sure to attach handles, as shown on page 16.



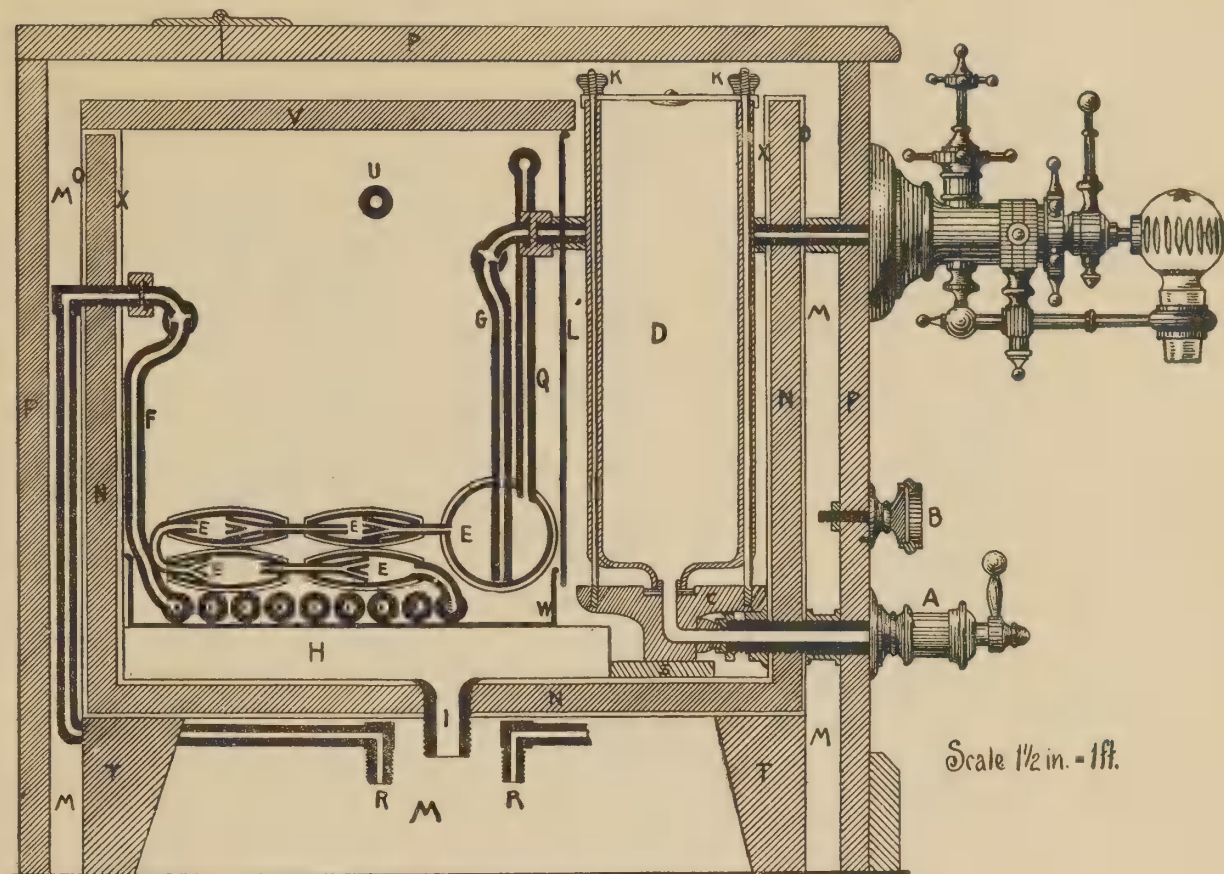


THE ARCTIC.

WITH BLOCK-TIN LINED SYRUP-FAUCETS AND BLOCK-TIN SYRUP-CANS.

- | | |
|--|---|
| <p>A. Block-tin syrup-can.</p> <p>B. Extension cooler connecting can with faucet.</p> <p>C. Patent soda-water cooler of solid block-tin, jacketed with copper; the smaller c c c being a coil of block-tin pipe, underlying the cups or cells.</p> <p>D. Pipe connecting cooler and draught-tube.</p> <p>E E. Couplings for connecting coolers with supply-pipes outside of shell leading to couplings N N.</p> <p>F F. Pipe connecting with gas-cock for venting cooler.</p> <p>G. Pan in which coolers rest.</p> | <p>H. Wood lining of double shell.</p> <p>I I. Legs of shell.</p> <p>J J. Air space between shell and marble.</p> <p>KK. Marble case.</p> <p>L L. Marble cover.</p> <p>M. Block-tin lined syrup-faucet.</p> <p>N N. Couplings for attaching supply-pipes to connect with fountains containing soda-water and mineral waters.</p> <p>O. Coupling for drain-pipe.</p> <p>P. Syrup name-plate and plate-holder.</p> <p>Q. Extension of cooler coil connecting with inlet coupling E.</p> <p>R. Wood cover.</p> <p>S. Zinc outer shell of double shell.</p> <p>T. Copper inner shell of double shell.</p> |
|--|---|

Prices of Arctic apparatus are given in Apparatus Catalogue, which, on application, will be mailed free to any one thinking of purchasing.

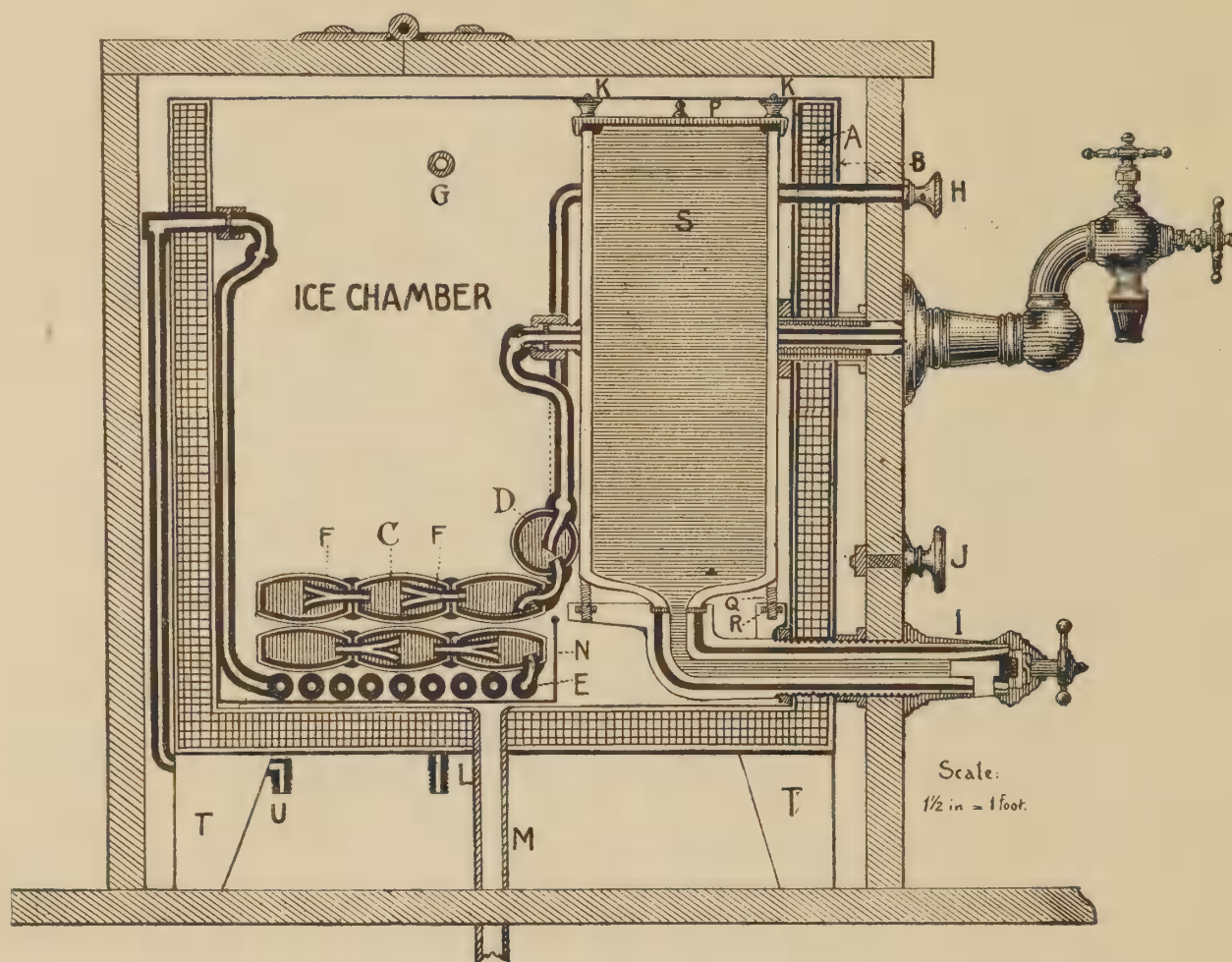


THE ARCTIC.

WITH BLOCK-TIN LINED SYRUP-FAUCETS AND REMOVABLE GLASS SYRUP-JARS.

- | | |
|--|---|
| A. Block-tin lined syrup-faucet. | M M. Air space. |
| B. Syrup name-plate and plate-holder. | N N. Wood lining of double shell. |
| C. Solid block-tin support for syrup-jar. | O O. Copper outer shell of double shell. |
| D. Removable glass syrup-jar. | P P. Marble case. |
| E E. Patent soda-water cooler, consisting of a coil of heavy block-tin pipe, cups or cells of solid block-tin jacketed with copper, and a cylinder of sheet block-tin encased in a seamless copper tube. | Q. Pipe connecting with gas-cock for venting cooler. |
| F. Extension of cooler-coil connecting with supply coupling. | R R. Couplings for attaching supply-pipes to connect with fountains containing soda-water and mineral waters. |
| G. Pipe connecting cooler with draught-tube. | S. Foundation on which solid block-tin connection, between jar and faucet, rests. |
| H. Support for cooler-pan. | T T. Legs of shell. |
| I. Coupling for drain-pipe. | U. Coupling attached to supply-pipe connecting with coupling R. |
| K K. Thumb-nuts for retaining jar in place. | V. Wood cover. |
| L. Metal partition protecting glass jar from breakage by ice. | W. Pan in which cooler rests. |
| | X X. Copper inner shell of double shell. |

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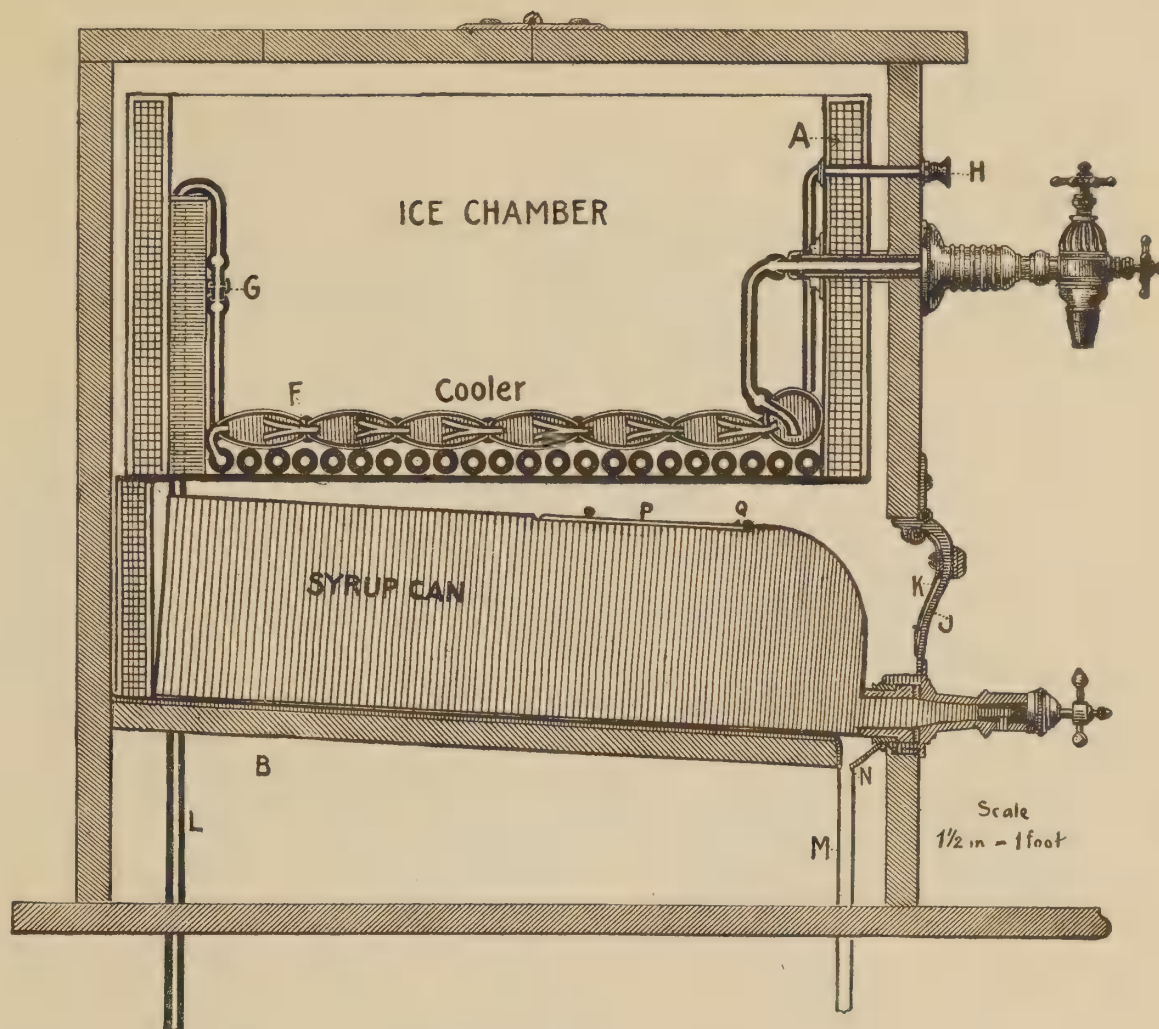


THE ARCTIC.

WITH GLASS-LINED SYRUP-FAUCETS AND REMOVABLE GLASS SYRUP-JARS.

- | | |
|--|---|
| <p>A. Wood lining between walls of double shell.</p> <p>B. Double shell.</p> <p>C. Patent cell cooler. The black line indicates the block-tin.</p> <p>D. Cylinder of patent cooler.</p> <p>E. Coil of patent cooler.</p> <p>F F. Y-shaped block-tin connecting pipes of patent cooler.</p> <p>G. Mineral water supply connection.</p> <p>H. Gas-cock for venting patent cooler.</p> <p>I. Patent glass-lined syrup-faucet.</p> | <p>J. Syrup name-plate.</p> <p>K K. Thumb-nuts.</p> <p>L. Supply connection for mineral water.</p> <p>M. Rubber drain-pipe.</p> <p>N. Pan of patent cooler.</p> <p>O. Walls of double shell.</p> <p>P. Covers to syrup-jar.</p> <p>Q Q. Brass rods for securing syrup-jars.</p> <p>R R. Nuts.</p> <p>S. Patent removable glass syrup-jar.</p> <p>T. Supports of double shell.</p> <p>U. Supply connection for soda-water.</p> |
|--|---|

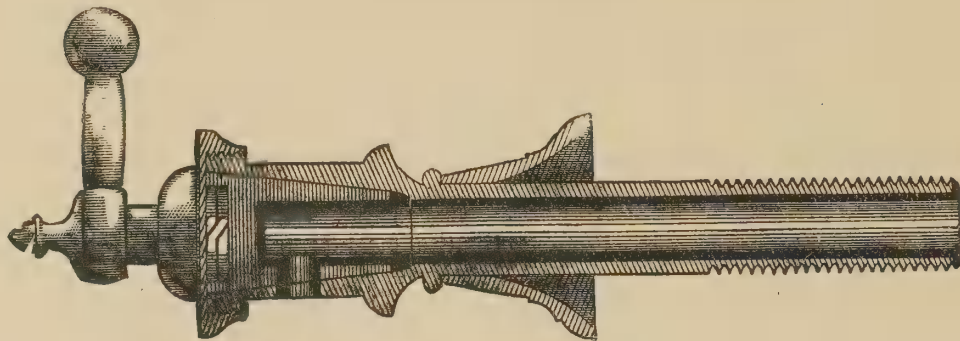
Prices of Arctic apparatus are given in Apparatus Catalogue, which will be sent free by mail, on application, to any one thinking of purchasing.



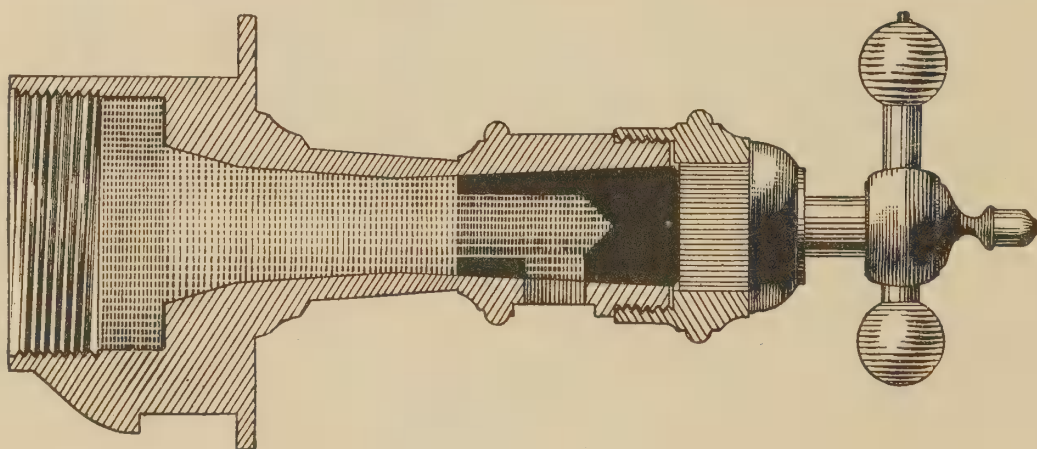
THE SIBERIAN ARCTIC.

- A. Wood lining between walls of double shell.
- B. Marble slab supporting syrup-chamber shell.
- C. Cells of patent cooler. The black line indicates the block-tin.
- D. Cylinder cooler, the last chamber of the patent cooler.
- E. Coiled pipe, the first member of the patent cooler.
- F. Y-shaped block-tin pipes connecting the various cells of patent cooler.
- G. Coupling connecting supply-pipe with patent cooler.
- H. Gas-cock for venting the cylinder of patent cooler.
- I. Syrup-faucet.
- J. Door of chamber containing syrup-tank.
- K. Spring which throws door open when tank is drawn forward in act of removing.
- L. Soda-water supply-pipe.
- M. Drain-pipe of lower shell.
- N. Gutter for removal of water condensed from the atmosphere.
- O O. Walls of double shell.
- P. Cover of patent drawer syrup-tank.
- Q. Hinge of syrup-tank cover.

Prices of Siberian Arctic apparatus are given in Apparatus Catalogue, which will be sent free by mail, on application, to any one thinking of purchasing.



BLOCK-TIN LINED ARCTIC SYRUP-FAUCET.



BLOCK-TIN SIBERIAN SYRUP-FAUCET.

SYRUP-FAUCET.

THE construction of the syrup-faucet may be readily seen by unscrewing the cap. The inside bearing should be occasionally oiled or greased. Care should be taken *not to interchange the inside pieces*, as each piece is ground to its corresponding number. Should there be a particle of leakage, *it is almost certain that the plug has been interchanged*, and an examination of the number should be made. These numbers will be found on the edge of the barrel of the faucet, and on the under side of the shank of the plug outside the cap.

By taking off the acorn that holds the handle on, and removing the handle and the cap of syrup-gate, a spring will be seen which keeps the plug firmly in position. Should this be broken it will cause leakage; but of course in such a case it is only necessary to replace the broken or defective spring by a new one.

Glass-Lined Syrup-Faucet.

To remove a jar from the apparatus, remove the thumb-nuts from the rods, grasp the jar and metal cap, and lift both out at the same time. By so doing, loss of the rubber washers in under side of metal cap will be avoided. These washers fit in a bevelled slot, but occasionally they adhere to the glass, and are knocked off when the cap is removed.

In replacing a jar, use care not to strike the nipple of the jar against the projecting end of the glass lining of syrup-faucet.

The plug and barrel of each syrup-faucet are ground together to make a perfect joint. IN CASE OF LEAKAGE IT IS ALMOST CERTAIN THAT THE PLUGS HAVE BEEN INTERCHANGED. To ascertain if this is the case, examine the numbers which will be found on the end of the barrel near the screw thread (or on the edge of the barrel under the cap), and on the under side of the spindle outside the cap. These numbers should correspond.

If, however, the leakage is not caused in this way, unscrew the cap, take out the spring that holds the plug in position, and open it wider so as to give the plug a greater pressure in the barrel. Before putting the plug in again, wipe it off carefully, and also wipe out that part of the barrel in which the plug works, as the slightest atom of grit or dirt between the plug and socket would cause leakage. If this does not make it tight, take two parts beef tallow and one part wax, and melt; when cold daub a little evenly over the plug with a small soft piece of wood, return the plug to its place, and screw the cap on firmly. They should be thoroughly cleaned out and greased once a month.

The apparatus should never be lifted or moved by the syrup-faucets, and the plug should never be driven to a bearing by a blow, for of course the glass lining is unyielding and would be broken by a strain or a blow. If the glass lining is broken the syrup-faucet will leak, and the unplated part will have to be changed.

Syrup-faucets have been received for repairs, in the caps of which washers of leather, rubber, and other material were found, evidently placed there to reinforce the springs.

This should never be done, as these washers will cause the spring to press the plug against its bearing with sufficient force to spoil the faucet.

If the springs have lost their elasticity, remove them and replace with new.

Upon one of the spokes of the handle a small knob or projection will be found. When this spoke is uppermost and perpendicular the faucet is closed.

To open the faucet, turn this spoke into a horizontal position. Use care to turn it exactly horizontal, for if not turned far enough, or if turned too far, the stream of syrup may shoot to one side.

Right-handed faucets open to the right, and left-handed faucets to the left. To change the position of a faucet from left to right, or *vice versa*, reverse the handle, so as to bring the knobbed spoke directly opposite its former position.

The spindle will be found to play loosely in the cap. This looseness is intentional, for it allows the hard rubber plug to adapt itself to the position of the glass lining.

When these faucets are used the marble work must be specially adapted; consequently they cannot be inserted in an old apparatus now in use, nor can they be used in all styles of new apparatus. In the Cyprus, for instance, all glass-lined syrup-faucets cannot be used.

Directions for Attaching a Siberian Syrup-Tank to a Syrup-Faucet.

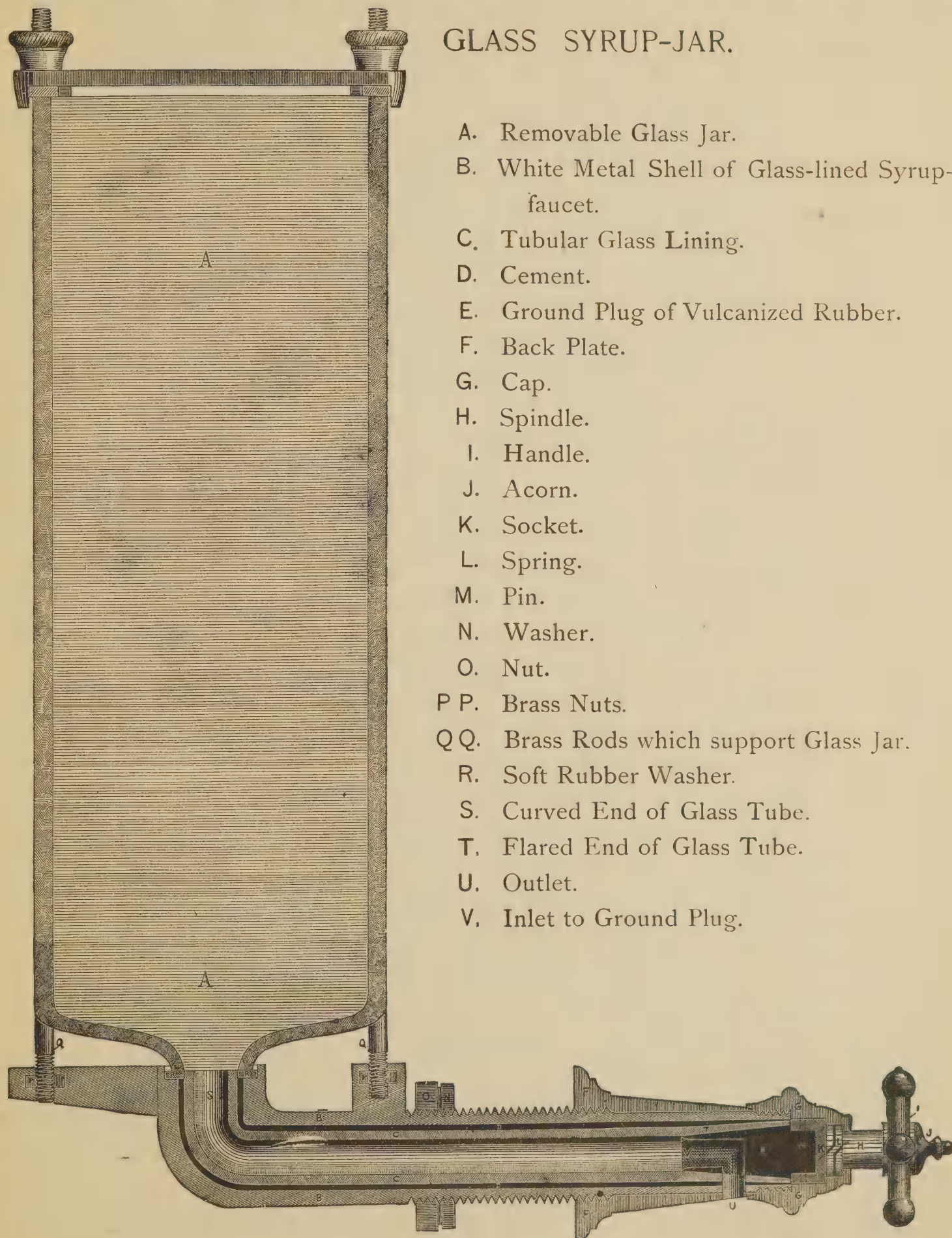
If a tank is to be removed, seize the split collar surrounding the neck of the tank with the tongs, which are made to fit into the slots of the collar, and unscrew it.

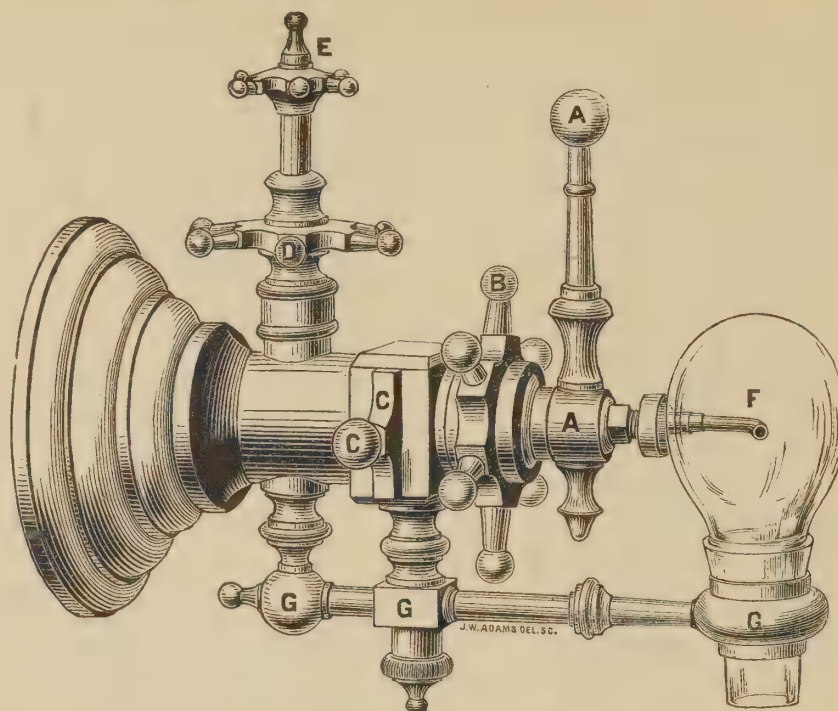
Take the split collar and place it around the neck of the tank, letting it come against the square shoulder. Screw the faucet on the collar, holding the collar with the tongs.

When the faucet is screwed on the tank as far as it can be by hand, bring the outlet-hole of the faucet in line with the bottom of the tank, and holding the faucet firmly in this position turn up the collar tight with the tongs.

Though leakage around the collar is unlikely, should it occur it is only necessary to use the tongs, and turn the collar up tightly to stop it.

GLASS-LINED ARCTIC SYRUP-FAUCET AND REMOVABLE
GLASS SYRUP-JAR.





PATENT DOUBLE-STREAM GLASS-BULB DRAUGHT-TUBE.

IN opening the draught-tube, first stir up the syrup with the fine stream a turn in one direction, and then by a turn in the opposite direction let on the large stream to fill up the glass. In drawing plain soda, use the large stream only.

The stop-cock **E** is so arranged that the volume of the large stream is not lessened, until the small stream is entirely cut off; thus enabling the operator to have a full solid stream with as small a fine stream as is desired. By screwing the stop-cock down as far as it will go, both streams may be entirely shut off.

A fresh, highly charged fountain requires less vent from the tube than a fountain nearly empty. When the fine stream has not force enough, raise the stop-cock **E**, and when it has too much force lower it.

This tube, although composed of several parts, is exceedingly simple, and readily understood. It is operated by a turn of the lever **A** in either direction, a quarter turn in one direction producing the heavy stream, and in the opposite direction the fine stream.

A is a lever for operating the tube in drawing soda.

B is part of the check-nut for tightening the washer, and in case of leakage needs only to be tightened. There can be no such thing as leakage if this wheel is turned up tight enough.

C is washer-holder, which contains in its recess the washer upon which the valve operates.

D stuffing-nut that packs the joint.

E wheel that regulates the pressure of the water from the tube, for the small stream, and also shuts off water.

F cut-glass nozzle, from which both large and small streams are drawn.

G brace to hold glass nozzle in position.

The washer is contained in the piece marked **C**. This washer-holder can be instantly removed by loosening the nut **B**, when it will slip out from its socket. The washer is a piece of thick leather, perforated, upon which the valve attached to lever operates.

The tube can never give the slightest trouble by leakage, as the least turn of the check-nut **B** packs the simple joint in the most perfect possible manner. To renew a washer, a slight movement of check-nut **B** allows the washer-holder to be drawn out, thus exposing the washer placed in the centre. The projecting spokes on nuts are for the purpose of tightening, and render the use of a wrench, which would mar the plating, unnecessary.

The washer on outer end of valve-spindle rarely needs to be renewed. If a new one is needed, be sure that it is not too thick.

To reach this washer, remove the thumb-screw, the brace **G**, and the glass bulb **F**. With a wrench remove the nut which holds the lever **A** in place, and also the lever **A**. Remove the check-nut **B**, containing the valve-spindle and sleeve, and push the valve-spindle back out of the sleeve. When the new washer has been placed on valve-spindle, and the valve-spindle has been returned to sleeve, the face of the valve should be flush with the edge of the sleeve and not project beyond.

A leak at the tip from which the water is discharged indicates that this washer is too thin, and a leak at the washer-holder **C** indicates that this washer is too thick.

The stop-cock **E**, **D**, has three washers, — the spindle-washer, the sleeve-washer, and the plug-washer. To renew them, unscrew the wheel **D** and pull it with the wheel **E** out of the tube. By rapping **E** with a small mallet or piece of wood it may be detached from the end of the spindle, and **D** can then be easily slipped off. In the recess at the bottom of **D** is the spindle-washer, which can be readily taken out. Smear the new spindle-washer well with simple cerate or clean tallow, and place it in the recess from which the old one has previously been removed.

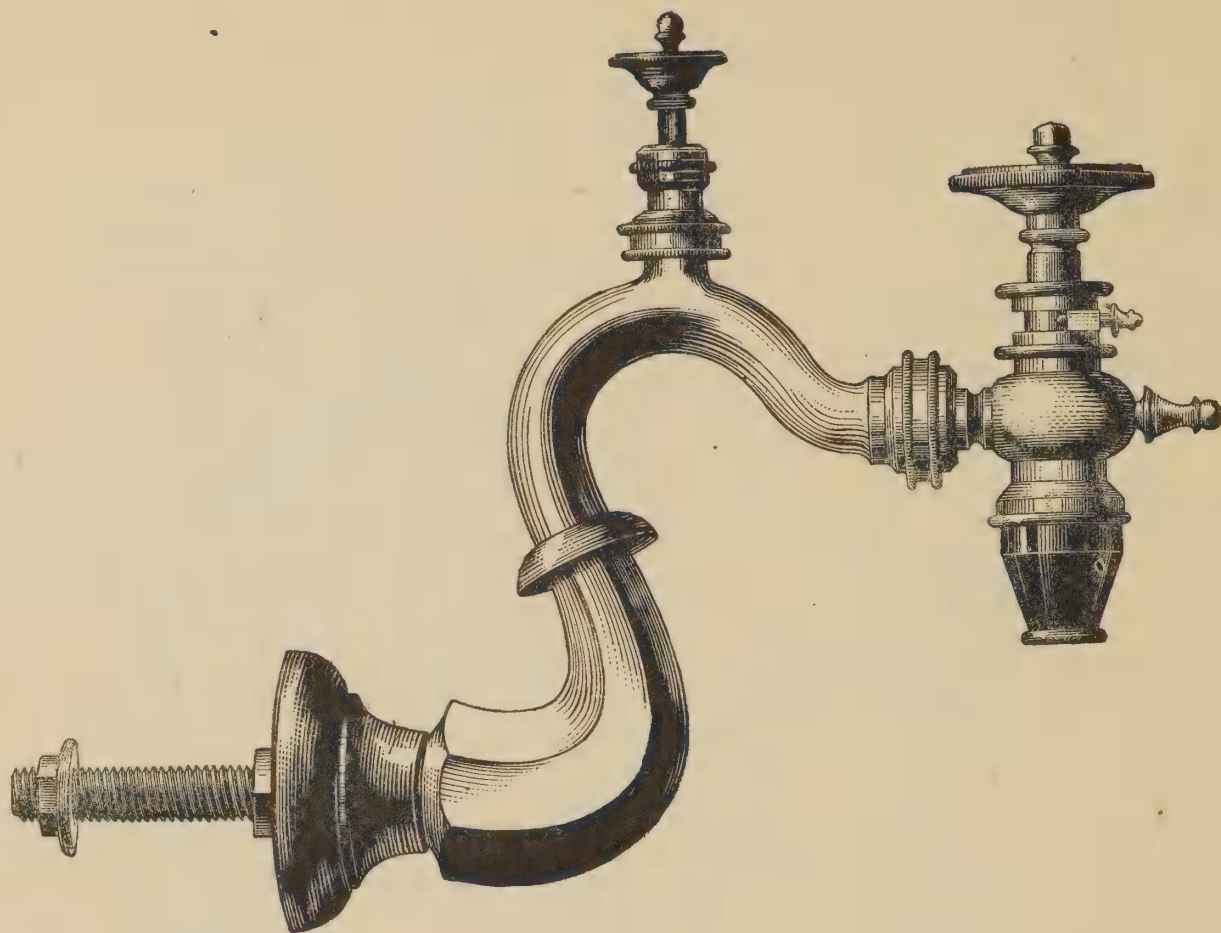
No special directions are needed for replacing the sleeve and plug-washers.

Replace the parts and screw the cap-nut **D** well down; work the spindle up and down by turning **E** several times and then screw down on **D** again. Repeat this operation until **D** is well home.

In taking off wheel **E**, *do not bend the spindle*, for if bent there will be a leak around it.

No difficulty will be experienced in putting the tube together, as it is so made that it will only go together one way, and that is the right way.

In operating this tube, remember that you can, by turning the wheel on top, reduce or increase the force of the fine stream without in either way affecting the supply from the large stream.



PATENT SWAN-NECK DOUBLE-STREAM DRAUGHT-TUBE.

IN operating the draught-tube, first stir up the syrup with the fine stream by a turn in one direction, and then by a turn in the opposite direction let on the large stream to fill up the glass. In drawing plain soda, use the large stream only. The tube, when closed, should have the indicator-key attached to the wheel-spindle directed inward, which is half-way between the opening of the fine and large stream. The force of either stream is effected by the two set screws on the front of the draught-tube, so that the degree of pressure can be instantly controlled by their use.

A fresh, highly charged fountain requires less vent from the tube than a fountain nearly empty.

If necessary to take the draught-tube apart to renew the washers or clear the passages, proceed exactly as follows: —

First, — Unscrew and remove the rubber nozzle.

Second, — With the draught-tube wrench unscrew and remove the washer-holder nut, found inside the nozzle, which contains the washer-holder and hexagonal washer.

Third, — Unscrew and remove the ornamental acorn at top of wheel.

Fourth, — Insert a stout wire in the opening from which acorn has been removed and press down firmly, forcing the valve and spindle far enough out at the bottom of the draught-tube head to allow it to be pulled out with the fingers and removed.

Fifth, — The indicator-key, a pointer which indicates when the tube is closed, and which is also a key connecting the wheel-spindle with the valve-spindle, may now be drawn out and the wheel removed.

All the working parts are now removed from the head.

Take Notice. Do not make the mistake of attempting to remove the indicator-key before removing the valve and its spindle. It cannot be done, and force applied will only mar the draught-tube.

Take Notice. Before putting the tube together again, examine the valve. If the grit, which exists in nearly all water, has cut a shallow groove or grooves extending in a quarter circle from opposite sides of the hole, the valve needs to be rubbed smooth.

To smooth the valve: Lay a piece of flour-of-emery cloth, or o o sand paper on a marble slab, or other smooth hard surface. Place the face of the valve flat, and holding it perfectly true rub with a circular motion until the grooves are entirely removed. If edge of hole, after rubbing, looks sharp it should be slightly rounded or countersunk with a sharp knife to look bevelled, so that it may not scrape or deface the surface of hexagonal leather washer.

Take Notice. The washer found on the upper end of valve-spindle rarely needs to be renewed; but if a new one is needed, be sure that it is exactly the same thickness as the old one removed, not as the old washer was when first inserted, but as it is now when removed. It may be necessary to reduce the thickness of the new washer, which can be done by paring the rough side evenly with a sharp knife.

If the washer used is too thick, the wheel will turn hard; if too thin, it will leak around the wheel-stem.

Smear the washer with tallow or simple cerate.

Washers should be renewed from supply sent with apparatus.

To put the draught-tube together.

First, — Clean thoroughly the head and all the parts, and smear all the washers with tallow or simple cerate.

Second, — Replace the wheel.

Third, — Replace the indicator-key, using care that wide side is perpendicular, so that split valve-stem when thrust up into space can pass at each side.

Fourth, — Replace the valve and valve-stem, with the hole in the valve toward the pointer of the indicator-key, pushing it with the fingers well up into place.

Fifth, — Put a new hexagonal washer in the washer-holder with smooth side

uppermost. Take care that the holes in the washer correspond with the holes in the washer-holder.

Take Notice. That the hexagonal washer and the ring washer, between the washer-holder and its nut, are greased.

Sixth, — Screw the nut containing the washer-holder into its place, and with the wrench turn the nut up fairly tight.

Seventh, — Place the slot in the wrench on the flat part of the washer-holder where it projects through the nut, and turn it around in the same direction in which the nut was tightened.

Eighth, — Turn the washer-holder nut up TIGHT.

Ninth, — Turn the washer-holder in the same direction as nut is made tight, until the word "Front" is in front.

Take Notice. Never turn the washer-holder to the left, as the nut is unscrewed, but if in adjusting the word "Front" the washer-holder is carried too far to the right, turn it completely around to bring it again into position; as turning it back will slack the nut a trifle and may cause a leak.

Tenth, — Return the nozzle and acorn to their places.

Strainer. The coupling on the arm where the head is attached contains a strainer which should be cleaned occasionally. The curved parts of draught-tube wrench form spanners for loosening and tightening this coupling. It is well to wind the spanner with a strip of chamois skin to prevent it from marring the silver.

Stop-Cock. The small wheel on the arm is a stop-cock which should be kept wide open when in use, and never closed unless it is necessary to renew washers, or clean the strainer.

Read Carefully. In several instances I have had complaints that the draught-tube leaks, and that customers have been unable to remedy the defect.

If the following directions are carefully followed, customers can instantly remedy any leakage that may occur: —

The most common cause of drip or leakage is the wear and shrinkage of the washers, and is easily remedied when the washers are not worn out. Whenever a leak occurs, take off the rubber nozzle, and with the wrench furnished with apparatus, tighten up the nut as tightly as possible, of course allowing the wheel on draught-tube to be worked. After doing this be sure and see that the word "Front" on washer-holder under nut is kept squarely in front. A trifling variation either way will cause a drip. To be sure that it is just in position, insert a wire rod in hole of washer-holder, which, if position of word "Front" is right, will be in a direct line with the ornamental acorn in front of draught-tube. The washer-holder with word "Front" on it, is not the same piece as the nut, and should be turned by means of same wrench always the same way nut was turned, until it is in right position. Should the washer-holder turn hard (from being corroded by water), completely unscrew nut, slip

washer-holder up through it, and put a little tallow between washer-holder and nut. If, after this is done, the drip still continues (which I very much doubt), then insert new washers, as directed above.

The entire length of both large and small tubes contains block-tin pipe, through which the water passes, avoiding contact with other metal.

Important. In nearly every case where the leakage of this tube continues, it is simply because customers WILL NOT READ THE DIRECTIONS.

Observe. The directions state "be sure and see that the word 'Front' on washer-holder under nut, or rather which passes through the nut, is kept squarely in front." The nut upon which the wrench is placed is one piece of metal, and the washer-holder is another piece. If the washer-holder is turned around with the nut in tightening, the outlet holes get in such a position that the valve cannot be closed, and so there is a continual drip.

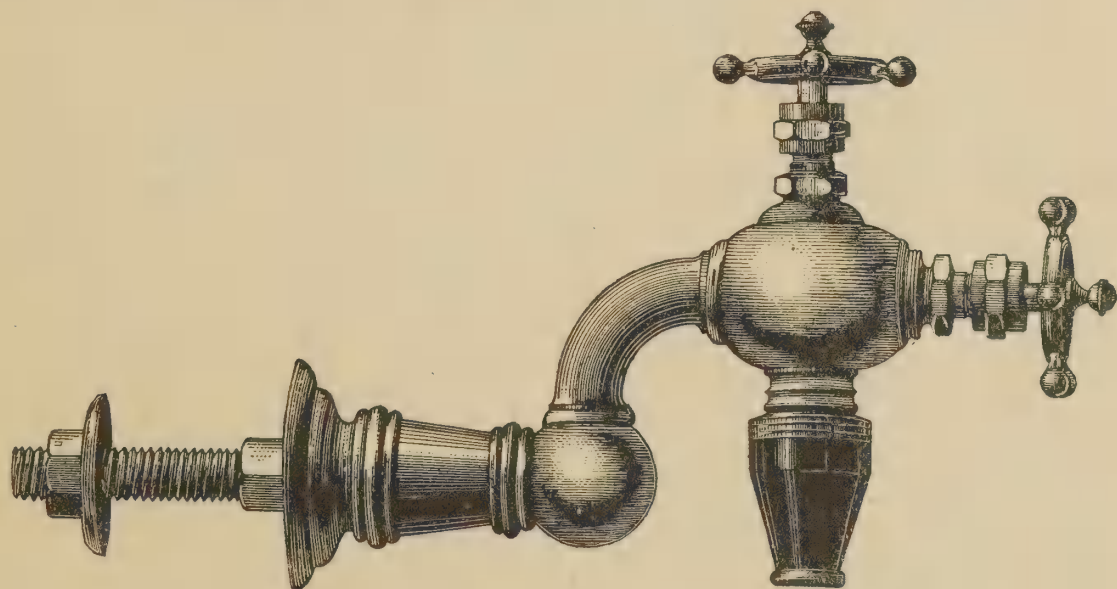
After tightening be sure that the word "Front" *is actually in front.*

Do not turn the washer-holder to the left to bring word "Front" into place.

If the wheel turns hard, either tallow is needed, or valve-spindle washer is too thick.

Two-Wheel Double-Stream Draught-Tube.

THIS tube is so simple in construction and in its working that with years of use it would not need repairs, nor even leak.



The wheel on top is for the fine stream, that on the front for the large stream. In operating the tube, first stir up the syrup with the fine stream, then close this valve and open the front valve, which lets on the large stream, to fill the glass. In drawing plain soda use the large stream only. The force of either stream is regulated by simply opening the valves more or less, — that is, by turning the operating valve more or less.

In case of leakage it is only necessary to renew the washers.

1869 Draught-Tube.

THIS tube is regulated by means of a small screw situated under the ornamental acorn on front of head. This acorn can be removed with the fingers. If it sticks, rap it with a small mallet, a piece of wood, or anything that will not mar the silver. On removing the acorn the regulating-screw can be seen in the recess. If this screw is turned in tight, it will completely shut off the fine stream; and the distance it is turned back, or unscrewed, determines the force and volume of the fine stream. Leave space enough outside of regulating-screw to turn the acorn. There is ample room to regulate the stream without preventing the acorn from being screwed well home.

Leakage in the 1869 draught-tube is usually caused by foreign matter in the the water. To prevent it, see that the clamp-joint on the end of the supply-pipe which attaches to the copper fountain, and the stop-cock attached to the shank of the draught-tube, are supplied with good strainers of fine wire gauze.

Whenever the valve does not close tight *easily* do not try to force it, but instead open it again and allow the water to wash out the gritty particles, which if the tube is forcibly closed will injure both valve and seat and cause a leak.

When valve or seat is injured they must be reground together, and as machinists generally find it a difficult valve to grind, it had better be sent to the factory.

Small Draught-Tubes for Mineral-Water, Beer, Etc.

THESE are simple compression draught-tubes, and contain but a simple washer. To renew the washer, remove the nut that the wheel passes through by means of the spanner-wrench sent with the apparatus. These washers should fit very snugly about the edge. Before putting on the nut see that the metal washer is placed inside the nut. It is necessary, in order to prevent leakage around the nut when the wheel is turned, that the edge should be turned up firmly against the edge of the washer. It will be apparent that this cannot be done when the wheel is turned in to a bearing; therefore, while the nut is being tightened, the wheel should be out, or loosened, so that the nut can go in.

Water-Jet.

A THREE-WAY cock is now placed in the water-supply of all apparatus that are supplied with water-fountains.

This cock is located inside the ice-case, and when turned one way will let on the water to the water-fountain, turned a second way will shut the water off, and turned a third way will throw a stream of water into the ice-case.

A rubber tube will be attached to the nipple, so that this stream can be utilized to wash out the ice-case, and also to wash out the syrup-cans in Arctic and Alaska styles of apparatus.

Renewing Marble Cover.

IN ordering a marble cover for an apparatus, it is necessary to furnish a paper pattern, giving the exact size and the thickness of marble.

The holes for hinges should be shown, also the styles of edges wanted.

The top of cover or polished surface will be understood by the word "Polished," written in plain letters.

Rubber Drain-Pipe.

THE rubber drain-pipe should always be left open. The ice-chamber is so arranged that the lower part of the cooler will always be flooded, the dry ice resting on the upper part. In Siberian apparatus no ice-water is allowed to stand, the dry ice coming in contact with every cell of the patent cooler. By this means the coldest possible soda-water is produced. It is never desirable to flood the whole ice-case. Should the drain-pipe become stopped up at any time, it is only necessary to blow through it to clear it.

Siberian Drain-Pipes.

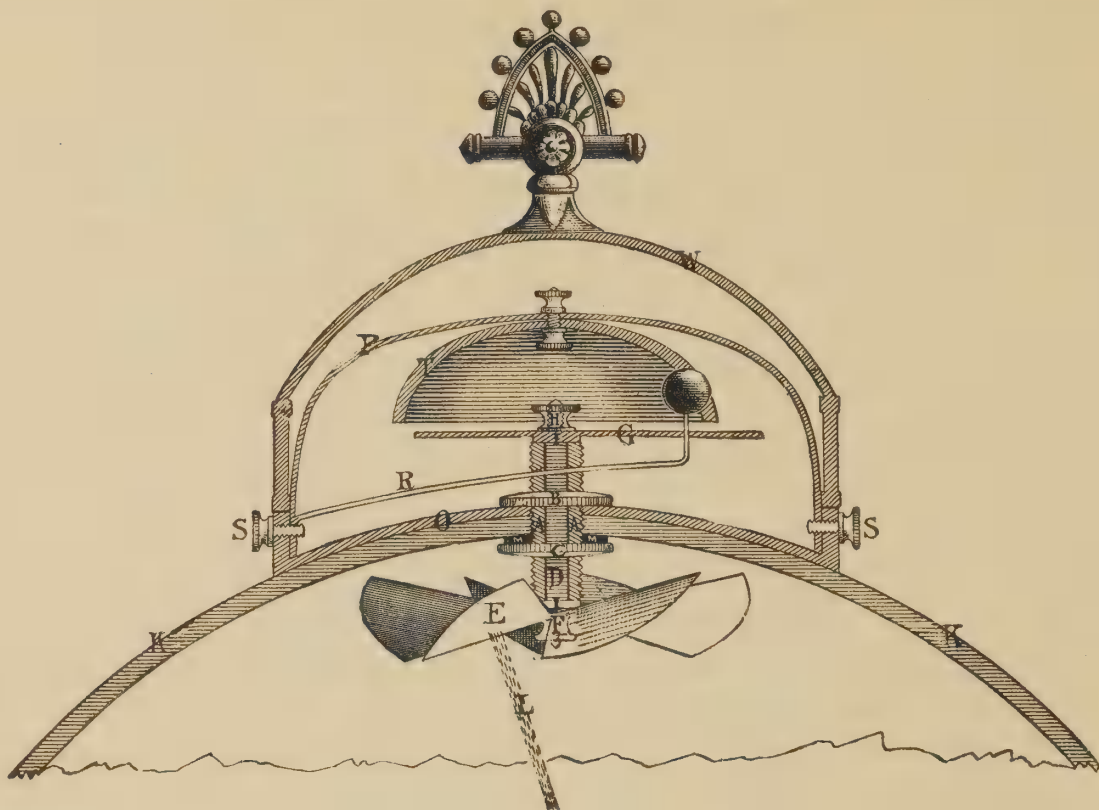
THE Siberian style has two rubber drain-pipes, — a large one from the ice-chamber, and a small one from the syrup-chamber. Both should pass through the hole in the counter.

Extra Washers.

EXTRA washers of all kinds sent by mail, upon application. My charge for a complete set of washers is fifty cents.

Glass Shades for Water-Fountains.

THE glass shades used upon my apparatus must be of special size, and so have to be made to order. It is very difficult to make these shades of a uniform size; indeed it is impossible, and so many are destroyed in the process that the cost of those remaining is made very high. Such shades are, however, imported in nests, and sold by glass and crockery-ware dealers in all parts of the country. When found of the right size, as one in each nest is sure to be, they can be purchased at a much lower figure than it costs me to get them made here; and I therefore advise customers to so purchase if possible, as there is not only a saving in this way, but also the risk of breakage in transportation is avoided. The very large number used with my apparatus makes it impossible for me to be supplied from imported nests of shades, and so I am forced to have them specially made at a largely increased cost. In ordering a glass shade be sure to send the cap which surmounts the top, and give the diameter of the inside of the pan which the shade rests in, that a perfect fit may be insured.



BELL ATTACHMENT FOR WATER-FOUNTAIN.

To put the attachment together: Place the part of silver canopy marked **O** in position on top of the glass globe **K**, having first taken out the knob-screws **S S** and removed frame **P**, which holds the bell **T** and the spring-hammer **R**.

Put in socket-screw-spindle **A** with the check-nut **B** screwed on about 3-8 inch from the upper end. Put on rubber washer **M** and check-nut **C**, screwing up firmly to secure the canopy and prevent leakage around the spindle. Put flange-wheel **E**, ring side up, upon spindle **D**, screwing firmly with nut **F** to prevent the wheel from working off. Spindle **D** is made with a left-hand thread, and nut **F** is made in two parts, one round and one hexagon. Put spindle **D** up through spindle **A**, placing washer **I** and lever **G** in position, and securing them firmly with nut **H**. Put on the frame **P** with bell **T** and spring-hammer **R**. Before putting on the top of the canopy **W**, turn on the water and try the bell to see if it is adjusted and in working order.

There should be a cock conveniently located, with which to turn on and shut off the water. When the water is turned on, see that the jet of water **L** strikes the flange-wheel **E** at the angle shown. If necessary, the jet-pipe can be bent and sprung a little out of centre.

The spring-hammer **R** should be adjusted so that when the lever **G** throws it back, it will rebound, strike the bell, and fall back just clear of the bell.

After the bell is adjusted, put on the top of canopy **W**.

In arranging attachment, be sure that the jet of water strikes the flanges of the wheel at such an angle that it cannot pass between them.

Ordering Duplicate Couplings.

To indicate size of male or female coupling that is to be duplicated, take a piece of soft wood and form it into a plug, slightly tapered off at the end, so that it will just enter the female coupling; then, by means of a wrench and vice, screw this piece of wood firmly into the coupling. The wood may be oiled a little, but the coupling should go on very snug. Saw off a section of this plug, which bears a distinct impression of the threads, and send it to me by mail. The wood will not only show me size of coupling, but what is equally important, the number of threads to the inch, and I can thus insure a good fit. It is advisable to send by *letter postage*, in order that you may mark the piece as from you.

Leakage.

I SOMETIMES have complaints from customers who do not seem to understand that in all new apparatus, and in old apparatus repaired, such as fountain-cocks, couplings, draught-tubes, etc., when new leather-washers are used, there is sure to be shrinkage while in transportation, and that there will be a leakage at all points unless the valves, couplings, cocks, etc., are all tightened up before using. This is specially important with draught-tubes, fountain-cocks, and apparatus-couplings.

Show Bills.

PARTIES using apparatus of my manufacture will be furnished with extra show-bills at cost, on application, by mail or express, as follows; —

Discovery of the North Pole	10	cents each.
Reindeer	20	" "
Crusader	20	" "
Arctic	15	" "
Before and after	15	" "
Polar Bar	10	" "
Fountain of Youth	10	" "
Hot-Soda	10	" "
Cooling off the Sun	10	" "
Only Cool Place	10	" "
Frame to fit the five 10-cent Cold Soda-Water Show-Bills	75	" "

A Unique Sign.

MR. JAMES W. TUFTS,

ROODHOUSE, ILL., May 27, 1885.

DEAR SIR, — Enclosed find twenty cents, for which please send me one of your large soda cards. I want the one with Arctic soda, printed thus: (*Arctic Soda*). I place it against the plate-glass on the inside of window, and then outline the letters on the outside with a bit of soap. Then I paint the letters on the inside with whiting and water mixed. It makes a handsome sign, and can be washed off and quickly and easily replaced after windows have been cleaned.

Yours truly,

D. B. MOORE.

THE CARE OF SODA-WATER DISPENSING APPARATUS.

The Care of Marble.

AS the polish on all marble is liable to receive injury from the spattering and fumes of soda and mineral-waters, the following directions are issued to assist customers in preserving the polish and appearance of the marble: —

All parts of the marble should always be kept perfectly clean and bright by rubbing at least once every day with a soft, smooth cloth. The front and parts exposed to the spattering of the soda-water and the fumes therefrom, should be rubbed quite frequently with a soft, smooth cloth saturated with perfectly pure water, and should then be at once rubbed dry with another cloth. If the marble shows signs of dimness, the gloss may be restored by using a compound of spirits of turpentine and bees-wax, mixed to the consistency of ordinary salve. Put this over the dim part, and then rub smartly with a soft, dry cloth for about a minute or more. If only slightly dim, the gloss of black or fancy marbles can be restored by rubbing on sweet or olive oil, but oil should never be used upon white marble.

I have found in some instances that customers used the same cloth to wipe off the drippings on the counter slab and the front of the apparatus. As the cloth is saturated with the acid it will, when so used, surely destroy the polish of the marble.

READ! About Cleaning Apparatus.

DO not use upon this apparatus the same cloth or sponge which has been used on the counter slab, as the acids of the beverages with which it is saturated will surely destroy the polish.

The marble should be kept clean and bright by rubbing with a soft, smooth cloth.

The parts exposed to the spatter and fumes of the soda-water should be rubbed quite frequently with a soft cloth saturated with pure water, and at once rubbed dry with another cloth.

Black marble must be oiled as often as once a week to prevent it from losing its color.

The film of oil will prevent the acids, — carbonic, phosphoric, and even sulphuric, — which are condensed with the moisture of the atmosphere upon the cold surface, from attacking the marble.

Use a soft rag saturated with sweet or raw linseed oil, and rub off as much as possible with a clean rag.

Never use oil on white, Bardiglio, Dove, or Breche de Seravezza marbles.

Veins and Seams in Fancy Marbles.

ALL fancy marbles are defective and have many veins and seams that must be filled. In fact the most expensive marbles are the most defective.

It frequently happens in manufacturing that mouldings of expensive marbles fall in pieces, not being strong enough to sustain their own weight. These defects, being always found in fancy marbles, are not considered faults, and it is customary with workers in marble to cement the broken parts, and thus cemented they are used in the finest work. If, therefore, from the jar of a cover in closing, or other cause, such a seam should open, a marble polisher should be called in to mend and repolish the break, or if a marble-worker is not to be had, the broken pieces should be carefully packed and sent to Boston for repairs.

These cemented joints, when nicely made, can hardly be seen, and are said to be stronger than the marble itself.

Repolishing Marble, and Repairing Broken Marble.

THE art of polishing marble is simple and easily acquired, requiring patience and perseverance rather than skill.

I will furnish a box containing all the necessary materials for repolishing marble and complete instructions for restoring, repolishing, and mending all varieties of marble, at prices so low that lack of knowledge or expense cannot hereafter be an excuse for the poor appearance of an apparatus.

PRICES.

Materials and instructions for polishing all White, Sevier, Dove, Bardiglio, and Onyx marbles	1.00
Materials and instructions for polishing all varieties of marble, quantity sufficient to repolish an entire apparatus	1.75
Cement for marble, per stick . . . . .	.30

As the color of the cement must match the marble to be mended, it is necessary in ordering to mention the name of the marble to be repaired.

The Care of Polished Wood.

To clean and renew the polish on ebonized cherry, natural or stained cherry, oak or ash, the following is recommended: —

Rubbing oil (petroleum machinery oil, 25° gravity)	1 part.
Spirits of Turpentine	2 parts.

Apply with a rag and rub dry with a clean cloth.

Filling Name-Plates.

SHOULD the black wax become worn out from the name-plates or syrup-plates, they may be refilled by heating and rubbing over them a mixture of bees-wax and lamp-black or black sealing-wax. The superfluous wax on the surface may be cleaned off with alcohol.

The Care of Silver.

I HAVE used PRICE'S Electro-Silver Polish about the factory with great satisfaction. It is made by O. J. PRICE, 485 14th Avenue, Detroit, Mich.

An excellent silver polish can be readily made as follows: —

Precipitated Chalk	80 parts
Rouge	1 part

Fill a pint bottle one-third full of this mixture, and add alcohol, diluted with an equal amount of water, to fill bottle.

Shake well before using; daub upon the silver with a piece of cotton flannel. Allow it to dry on, and clean off with a piece of cotton flannel, using a brush for the interstices.

At Close of Season.

AT the close of soda-water season the counter-apparatus should be taken apart and thoroughly cleaned and dried. The fountain and coolers should be rinsed with alcohol and dried inside by exposure to moderate heat.

Should any article need repairing, it is important that it SHOULD BE SENT FOR REPAIRS BEFORE JANUARY, for during my busy season there is liability of serious delay in such work. Be careful to mark plainly with your name and address. Enclose complete list of the articles, and give full and explicit directions as to what is required, even though this has been previously explained in correspondence.

I shall at all times be pleased to answer any inquiries from my customers, and will exert myself to promote their interest as far as lies in my power.

MISCELLANEOUS RECEIPTS.

To Remove Smoke Stain from Marble.

HALF fill a quart earthen bowl with water. Add plaster paris, sprinkling it with the fingers into the water and stirring constantly until it begins to thicken.

Wet the marble with a cloth or sponge, pour on the plaster, and let it remain over night.

If stain is very bad, sprinkle a little chloride of lime over the wet marble before putting on the plaster.

Use a brass chisel or one whittled from a piece of wood in removing the plaster, starting the chisel under the edge and cleaving the plaster off. Do not use an iron chisel. Wash with water and dig out corners with a pointed stick.

Repeat the application if necessary. (G. H. CLAPP.)

Solution for Cleaning Silver-Ware.

TWO pounds of cyanide of potassium to one gallon of water.

This solution is very efficacious, as it instantly removes all tarnish, but goods must not be allowed to remain in the solution.

Articles to be cleaned should be put in and taken out immediately, and then instantly dipped in clear hot water for cleaning. Wipe carefully with fine cotton-flannel. In wiping or cleaning silver-plated ware, the motion of the hand should always be in one direction, as in this way the burnishing is not so readily injured.

As this solution is *very poisonous*, great care should be taken in its use.

To Clean Brass.

THE government method prescribed for cleaning brass, and in use at all the United States arsenals, is claimed to be the best in the world. The plan is to make a mixture of one part common nitric acid and one-half part sulphuric acid, in a stone jar, having also ready a pail of fresh water and a box of sawdust. The articles to be treated are dipped in the acid, then removed into the water, and finally rubbed with sawdust. This immediately changes them into a brilliant color. If the brass has become greasy, it is first dipped in a strong solution of potash and soda in warm water; this cuts the grease, so that the acid has free power to act.

Scouring Paste for Copper, Brass, and other Metals.

MR. J. W. COLCORD says in the *Pharmaceutical Record*: The following may not be the identical scouring paste so extensively used, but it gives me equal or better satisfaction in using:—

Oxalic Acid	1 part
Peroxide of Iron (jewellers' rouge)	15 parts
Powdered Rotten Stone	20 "
Oleic Acid	60 "
Petrolatum	4 "

Pulverize the acid, and add the rouge and rotten stone, mixing thoroughly, and sift to remove all grit, then add gradually the oleic acid and petrolatum, incorporating thoroughly. Add oil of mirbane, or, as I prefer, oil of lavender, to suit. I apply with a piece of flannel, rubbing off with a piece of soft paper, and polish with chamois. For cleaning metal, I have never seen its equal.

Test for Copper.

"YELLOW prussiate of potash" is a test for ascertaining the presence of copper in water.

Draw a small quantity of the suspected water; then drop into it a small piece of the potash. Should copper be present, the water assumes a reddish-brown color. Should iron be present, the water will become black.

Prussiate of potash is a *deadly poison*.

THE MANUFACTURE OF JUICES AND EXTRACTS.

FRUIT JUICES.

Pine-Apple Juice.

Pure Juice (fresh) by expression	1 gallon
Sugar	15 pounds
Fruit Acid	2 ounces

Raspberry Juice.

Pure Juice (fresh) by expression	1 gallon
Sugar	15 pounds
Fruit Acid	2 ounces

Strawberry Juice.

Pure Juice (fresh) by expression	1 gallon
Sugar	15 pounds
Fruit Acid	2 ounces

Tonic Extract.

Pulverized Peruvian Bark (red)	1 ounce
Bruised Cardamom	¼ "
" Cinnamon	½ "
" Angelica	½ "
" Canella	½ "
" Coriander Seed	½ "
" Cochineal	30 grains
" Cloves	15 "
Alcohol	1 pint
Water	1 "

Let them stand mixed for a few days and strain.

Calisaya Extract.

Take of

Oil Cinnamon	15 drops
Oil Nutmegs	10 "
Oil Cloves	15 "
Tincture Tolu	1 ½ drams
Tufts' Extract Ginger	1 ½ ounces
Fluid Extract of Cinchona	2 "
Alcohol	2 "

Add sufficient water to make 8 ounces when complete.

Extract of Sarsaparilla.

Extract Checkerberry (Wintergreen)	} equal parts
" Sassafras	

Extract of Jamaica Ginger.

Jamaica Ginger Root, bruised	12 ounces
Alcohol	1 quart

Let them stand mixed for a week, or prepare by percolation.

Extract Vanilla.

Vanilla Bean	1 ounce
Water	6 ounces
Alcohol	10 "
Sugar	2 "

Cut the vanilla into small bits, rub it thoroughly with the sugar, mix it with the alcohol and water in a bottle, and place it in a water-bath or warm place.

Angostura Bitters.

Gentian Root	4 ounces
Cardamom Seed	4 "
Balsam Tolu	4 "
Calisaya Bark	10 "
Canada Snake-Root	10 "
Virginia "	10 "
Licorice Root	10 "
Yellow or Cinchona Bark	10 "
Allspice	10 "
Dandelion Root	10 "
Angostura Bark	10 "
Orange Peel	1 pound
Alkanet Root	1 "
Caraway Seed	2 ounces
Cinnamon	2 "
Cloves	2 "
Nutmeg	2 "
Coriander Seed	2 "
Mace	2 "

Add alcohol and water, equal parts, to make 50 gallons filter and add 30 pounds of honey.

Calisaya Elixir.

Calisaya Bark	2 ounces
Orange Peel	2 "
Cinnamon	1 "
Coriander Seed	1 "
Caraway Seed	$\frac{1}{2}$ "
Anise Seed	$\frac{1}{2}$ "
Cardamom Seed	$\frac{1}{2}$ "

Add diluted 95 per cent alcohol, enough to make 1 gallon, and one pint of rose-water.

JAMES W. TUFTS' BOOK OF DIRECTIONS.

Snake-Root Cordial.

Brandy	4 ounces
Sugar	1 pound
Alcohol	1 quart
Oil Snake-Root	10 drops
Water	3 quarts

Tonic Cordial.

Tincture Gentian	6 ounces
“ Cinchona	4 “
“ Lavender, compound	4 “
Oil Orange	9 drops
Simple Syrup	3 gallons

THE MANUFACTURE OF SYRUPS FOR DISPENSING.

Plain or Simple Syrup.

Sugar	10 pounds
Water	1 gallon

Heat the water and sugar sufficiently to dissolve the sugar. Strain through flannel cloth.

The syrup may be made with cold water by repeated stirring, or may be made by filtering the water through sugar placed in a vessel with a perforated bottom.

The use of isinglass, egg, gum arabic, Irish moss, soap bark, or something of like nature, is essential in order to retain the foam on soda-water when drawn. Tufts' Soda Foam, is the best and most effective article yet introduced.

Foam for Soda-Water Syrups.

TAKE of Tufts' Dry Soda Foam 4 ounces ; place in a pint bottle and fill with water ; place the bottle in hot water for several hours ; when cold, strain through cloth, and allow to settle until it becomes clear. Decant ; add four ounces of alcohol and enough water to make it measure 1½ pints. This will never spoil. Never add foaming material to syrup until about to use it. Use 1 to 2 ounces to the gallon. Syrups flavored with beer extracts require none. Be careful not to use enough to taste.

Cream.

WHERE genuine cream cannot be obtained, the following is an excellent substitute.

Pure Milk	2	quarts
Corn Starch	6	teaspoonfuls
Egg	1	

Mix the corn starch with a little milk, and beat up the egg thoroughly.

Fruit Acid.

Citric Acid or Tufts' Citric Phosphate	4	ounces
Hot Water	8	"

Use 1 to 4 ounces to each gallon fruit flavored syrup.

Acid Phosphate.

TUFTS' Acid Phosphate is unexcelled. It should be dispensed from an essence bottle, about 1 dram or teaspoonful to a tumbler, after drawing the desired syrup, — or 1 to 3 ounces to each gallon of flavored syrup.

Acid Phosphate (Citric).

MAKE a solution of the following proportions: Tufts' Citric Phosphate, 6 ounces; boiling water, 15 ounces. Dissolve thoroughly, and filter through fine flannel, felt, or paper; dispense from an essence bottle, about 1 dram to a tumbler.

To Prevent Syrups from Crystallizing.

A BOSTON confectioner prevents syrup from crystallizing by the addition of glucose in the proportion of 4 pounds glucose to 25 pounds sugar. (FOLSOM.)

Ambrosia Syrup.

Raspberry Syrup	1	quart
Vanilla Syrup	1	"
Hock Wine	4	ounces

Banana Syrup.

Tufts' Extract Banana	1	ounce
Tufts' Fruit Acid	1	"
Tufts' Yellow Vegetable Color	1	"
Tufts' Soda Foam	1	"
Simple Syrup	1	gallon

Blackberry Syrup.

Tufts' Blackberry Juice $\frac{1}{5}$ gallon
or one-quart champagne-bottle full.

Granulated Sugar $3\frac{1}{4}$ pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling.

Add enough simple syrup to make 2 gallons, and 2 ounces each Tufts' Soda Foam, and Tufts' Fruit Acid.

Birch-Beer Syrup.

Tufts' Birch Beer Extract 2 ounces

Tufts' Sarsaparilla Color 1 ounce

Tufts' Soda Foam $1\frac{1}{2}$ ounces

Calisaya Syrup.

Tufts' Calisaya Extract 6 ounces

Tufts' Extract Orange 2 "

Simple Syrup 1 gallon

Mix thoroughly.

Catawba Syrup.

Angelica Wine 1 quart

Muscatel Wine 1 pint

Catawba Wine $2\frac{1}{2}$ quarts

Plain Syrup 1 gallon

Raspberry Syrup 1 pint

Champagne Syrup.

Rhine Wine, with a rich bouquet. 2 pints

Old Otard Brandy 2 ounces

Good Sherry 1 ounce

Granulated Sugar 3 pounds

Dissolve the sugar without heat.

Chocolate Syrup.

Best quality Baker's or Maillard's Chocolate 1 pound

Water 1 gallon

Corn Starch 3 ounces

Granulated Sugar 7 pounds

Dissolve the chocolate in hot water, using great care not to scorch it.

Mix the corn starch with cold water, add to the chocolate, and boil over a slow fire stirring constantly; strain through a sieve to remove coarser particles, dissolve the sugar while hot.

Chocolate Syrup.

Tufts' Double Vanilla Chocolate Paste (one package)	1	pound
Simple Syrup (hot)	1	gallon

Mix thoroughly and strain while hot through flannel or fine sieve.

Chocolate Syrup.

Tufts' Extract Chocolate	3½	ounces
Tufts' Sarsaparilla Color.	1	ounce
Tufts' Soda Foam	1	"
Simple Syrup	1	gallon

Clam-Juice Soda.

Bailey's Clam Juice	1½	ounces
Cold Milk	2	"
Soda	5	"
Salt and pepper to taste.		

N. B. Always use white pepper.

Claret Syrup.

Is simple syrup with claret wine to taste, say one third wine.

Coffee Syrup.

Mocha Coffee	½	pound
Java Coffee	½	"
Boiling Water	1	gallon

Boil together, or pass through a suitable filter coffee-pot, until 1 gallon of infusion is obtained, settle and add 10 pounds granulated sugar.

Coffee Syrup.

Tufts' Condensed Coffee Extract	8	ounces
Tufts' Sarsaparilla Color	1	ounce
Simple Syrup	1	gallon

Cream-Soda Syrup.

Tufts' Cream Soda Extract	2	ounces
Tufts' Soda Foam	1	"
Simple Syrup	1	gallon

Cream Soda-Water.

THIS drink when nicely made is both attractive in appearance and delicious. It is very popular in Ohio. The following formulas are furnished me by one of the most successful soda-water dispensers in Ohio: —

Nectar and Cream Syrup.

Alderney Cream (no other)	1 gallon
Granulated Sugar	10 pounds
Eggs, both white and yoke, beaten very light	4
Tufts' Extract Vanilla	2 ounces
Tufts' Extract Lemon	2 “

Mountain-Pink Syrup.

Alderney Cream (no other)	1 gallon
Granulated Sugar	10 pounds
Eggs, both white and yoke, beaten very light	4
Tufts' Extract Vanilla	2 ounces
Tufts' Extract Lemon	2 “
Tufts' Pine-apple Juice	8 “
Bicarbonate Soda	½ ounce

Color pink with Tufts' Fruit Color.

The bicarbonate soda is added to the pine-apple juice to neutralize any acid that may be present.

Be sure not to add any acid to the pine-apple juice used for this purpose.

In dispensing these drinks, ice is shaved into the tumbler until it is two-thirds full; the syrup and soda-water are then drawn and more ice shaved on top. Shaving ice on top is essential. It adds greatly to the attractiveness of the drink. (LATIN.)

I can furnish an ice-shaver which is especially adapted for use in drawing this drink. It shaves every particle of ice to snow, and does not clog up. Price in Star Sevier marble, \$75.00.

Don't-Care Syrup.

“DON'T Care” is a fancy name, and any syrup will do. I sometimes advise a mixture of the most popular kinds.

The following formula is said to be very fine: —

Pine-apple Syrup	1 pint
Strawberry	1 “
Tufts' Extract Vanilla	1 ½ ounces
Port Wine	½ pint
Simple Syrup	1 gallon

(WILSON CUTTER.)

Egg-Nogg Syrup.

Simple Syrup	2	quarts
Cream	2	"
Brandy	$\frac{1}{2}$	pint
Jamaica Rum	$\frac{1}{2}$	"
Eggs	5	
Corn Starch	3	ounces
Essence of Mace or Nutmeg	1	tablespoonful

Heat the cream carefully, and mix the corn starch with a little cold water, and add the cream. Keep on the fire until the mixture thickens. When cold add the other ingredients.

Florida Orangeade.

THE attraction of trade effected by this beverage is not only or principally in its palatable qualities, but in the manipulation in preparing the drink in presence of the customers.

The oranges generally used in the south are the Florida bitter sweet, — a natural fruit not found in the northern markets; but the common orange makes an equally good drink in every way.

DIRECTIONS. — Cut an orange in halves, and express juice of one or both halves into the tumbler; then shake in from an essence bottle a few drops of dilute extract of orange, and from a similar bottle a few drops of dilute solution of citric acid; then draw in the usual quantity of plain syrup as used for soda-water, and fill the glass from the soda-water draught-tube.

I advise the use of the lemon squeezer with legs, a cut of which is shown in this book.

Fruitina Syrup.

Tufts' Fruitina Juice	$\frac{1}{5}$ gallon
or one-quart champagne-bottle full.	
Granulated Sugar	$3\frac{3}{4}$ pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling.

Add enough simple syrup to make 2 gallons, and 2 ounces each Tufts' Soda Foam, Tufts' Fruit Color, and Tufts' Fruit Acid.

Tufts' Fruit Acid.

1 to 4 ounces to each gallon of fruit-flavored syrup.

Tufts' Fruit Color.

$\frac{1}{2}$ ounce to each gallon of syrups of the red fruits.

Grape Syrup.

Juice of Catawba Grape	1	quart
Simple Syrup	3	quarts

Or,

Brandy	½	pint
Tufts' Extract Lemon	¼	ounce
Tincture Red Saunders	2	ounces
Simple Syrup	1	gallon

Ginger Syrup.

Tufts' Extract Jamaica Ginger	3	ounces
Tufts' Soda Foam	1	ounce
Simple Syrup	1	gallon

Ginger-Ale Syrup.

Tufts' Ginger Ale Extract	5½	ounces
Tufts' Fruit Acid	4	"
Tufts' Soda Foam	1	ounce
Simple Syrup	1	gallon

Ginger-Cordial Syrup.

Tufts' Ginger Cordial Syrup	1½	ounces
Soda Water	6	"

Shake with cracked ice, in vented shaker, — Tufts' Egg Phosphate Shaker.

Gum-Aroma Syrup.

Simple Syrup	1	gallon
Tufts' Extract Gum Aroma	2	ounces
Tufts' Fruit Acid	1	ounce
Tufts' Soda-Foam	1½	ounces

Hock Syrup.

Is simple syrup with Claret wine to taste, say one third wine.

Ice-Cream Soda-Water.

ICE-CREAM soda-water is very popular, and some dealers have increased their business to a remarkable degree by its sale.

By using fruit-juices to flavor his syrups and plain ice-cream without flavoring, any dealer can more than double his soda-water trade.

The ice-cream should be kept in a large can, packed in ice and placed under the counter within convenient reach. Draw the syrup required, using

JAMES W. TUFTS' BOOK OF DIRECTIONS.

less than for ordinary soda, put the ice-cream into the tumbler with a large spoon, fill up with soda-water, and give the customer an ice-cream soda-water spoon to stir and eat the ice-cream with.

Use the ice-cream liberally. Do not make the mistake of using too small a quantity of ice-cream. Use about four ounces to the glass.

One of the most successful dispensers of ice-cream soda-water tells us his ice-cream costs sixty cents per gallon. Of course he makes it himself.

Experience proves that ice-cream soda-water at five cents per glass pays. The smaller quantity of syrup and soda-water used compensates in a measure for the additional expense of ice-cream, while the largely increased sale makes it far more profitable in the end. The labor, consumption of ice, and interest on investment in apparatus, is but little greater for a large business than for a small one, and the dealer's general business is always increased by a lively soda-water trade.

10 gallons Soda-Water (1280 ounces, 5 to each glass), at 15 cts. . .	\$1.50
2 " Simple Syrup (256 ounces, 1 to each glass), at 46 cts. . .	.92
3 ounces Tufts' Extract Vanilla, at \$12.00 per gallon . . . . .	.30
8 gallons Ice-Cream (1024 ounces, 4 to each glass), at 60 cts. . .	4.80
	\$7.52

Making 256 glasses of 10 ounces each; costing three cents per glass.

(O. J. PRICE.)

Lactart Syrup.

Lactart	12 ounces
Simple Syrup	1 gallon

Lactart-Sherbet Syrup.

Orange Syrup	10 ounces
Pine-apple Syrup	10 "
Vanilla Syrup	10 "
Lactart	6 "

Egg Lactart.

Simple Syrup	½ ounce
Eggs	1
Lactart	1 dram
Nutmeg, grated	sufficient quantity

Mix thoroughly in each of the Lactart formulas.

Lemon Syrup.

TAKE juice of 4 lemons; rub peel, after outside is taken off, with 12 ounces granulated sugar; add 1 pint of water; strain and add the solution, together with juice, to 1 gallon simple syrup.

Or, as a substitute: —

Simple Syrup	1 gallon
Tufts' Fruit Acid	1 ounce
Tufts' Extract Lemon	3 drams or tablespoonfuls

Limeade.

DRAW the usual quantity of plain syrup into the tumbler, then squeeze the juice of one-half of a fresh lime — not lemon — into the tumbler (using a squeezer), put in a small quantity of shaved or ground ice. Shake from an essence bottle a few drops of citric acid solution (fruit acid), which may be slightly colored for effect, fill the tumbler full of soda-water.

The limes may be bought by the barrel at a low price; and as the fruit is small (not larger than a walnut), this item is of trifling expense.

Maltese-Orange Syrup.

Tufts' Maltese Orange Juice	$\frac{1}{5}$ gallon
or one-quart champagne-bottle full.	
Granulated Sugar	$3\frac{1}{4}$ pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling. Add enough simple syrup to make two gallons, and two ounces each of Tufts' Soda Foam, Tufts' Fruit Color, and Tufts' Fruit Acid.

Malto.

THE following is said by the "Drug Clerk's Journal," September, 1888, to make a preparation similar to that sold for soda-fountain use, and cannot be distinguished from the genuine: —

Raspberry Juice	1 dram
Lactic Acid, concent	1 "
Phosphoric Acid, syrupy	1 "
Burnt Sugar, Sarsaparilla Color	15 drops
Simple Syrup enough to make	24 fluid ounces

Mix thoroughly.

Maple Syrup.

Maple Sugar	$3\frac{1}{2}$ pounds
Water	1 quart
Fruit Acid	$\frac{1}{2}$ ounce

JAMES W. TUFTS' BOOK OF DIRECTIONS.

Milk-Shake Syrup.

SEE *Formulas for shaken drinks.*

Milk-Punch Syrup.

Brandy	2	pints
Rum (Jamaica)	2	"
Condensed Milk	$\frac{1}{2}$	pint
Plain Syrup	4	pints

Mountain-Pink Syrup.

SEE *Cream Soda.*

Peruvian, Ottawa, or Root-Beer Syrup.

Tufts' Peruvian Beer Extract	5 $\frac{1}{2}$	ounces
Tufts' Fruit Acid	2	"
Tufts' Soda Foam	1	ounce
Simple Syrup	1	gallon

Nectar Syrup.

Strawberry Syrup	1	quart
Orgeat Syrup	1	"
Madeira Wine	4	ounces

Nectar and Cream Syrup.

SEE *Cream Soda.*

Nerve-Tonic Syrup.

Tufts' Nerve Tonic Extract	2 $\frac{1}{2}$	ounces
Simple Syrup	1	gallon
Tufts' Sarsaparilla Color	1	ounce
Tufts' Soda Foam	1	"

Orange Syrup.

Tufts' Extract Orange	3	drams or teaspoonfuls
Simple Syrup	1	gallon
Tufts' Fruit Acid	$\frac{3}{4}$	ounce
Tufts' Yellow Vegetable Color	1	"
Tufts' Soda Foam	1	"

Orange-Flower Syrup.

Simple Syrup	1	gallon
Tufts' Extract Orange Flower	2	ounces
Tufts' Fruit Acid	1	ounce
Tufts' Soda Foam	1 $\frac{1}{2}$	ounces
Tufts' Yellow Vegetable Color	1	ounce

Orgeat Syrup.

Tufts' Extract Almond	1 dram or tablespoonful, 60	drops
Simple Syrup	1	gallon
Tufts' Soda Foam and Sarsaparilla Color		to suit

Pear Syrup.

Tufts' Extract Pear	1	ounce
Simple Syrup	1	gallon
Tufts' Fruit Acid	1	ounce
Tufts' Soda Foam	1	"

Pine-Apple Syrup.

Tufts' Pine-apple Juice	1/3	gallon
or one-quart champagne-bottle full.		
Granulated Sugar	3 1/4	pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling. Add enough simple syrup to make two gallons, and two ounces each of Tufts' Soda Foam and Tufts' Fruit Acid.

Or,

Pine-apple Juice, as per page 41	1	pint
Simple Syrup	2	quarts

Or,

Tufts' Extract Pine-apple (artificial)	1	ounce
Simple Syrup	1	gallon
Tufts' Fruit Acid	1	ounce
Tufts' Yellow Vegetable Color	1	"
Tufts' Soda Foam	1	"

Persian Sherbet.

SHAVE some ice into the tumbler; add: —

Strawberry Syrup	2	ounces
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Fill tumbler nearly full of soda-water, using large stream only.

Shake from handsome essence bottles,

Tufts' Extract Lemon	a few	drops
Tufts' Fruit Acid		"
Tufts' Extract Bitter Orange, colored bright red with Tufts' Fruit Color		"

Turn into patent shaker and shake.

Charge ten cents.

Phosphates.

PHOSPHATES can be made of all flavors; but Maltese (red) Orange, Raspberry, Grape, Lemon, and Ginger are the favorites. Phosphates should be drawn in seven-ounce tumblers.

Tufts' Acid Phosphate is unexcelled. It should be dispensed from an essence bottle.

A solution of Tufts' Citric Phosphate, 6 ounces in 15 ounces of water, filtered, makes a wholesome and palatable acid phosphate, superior to any in the market.

Phosphate	1	teaspoonful
Syrup of desired flavor	½	ounce
Soda-Water to fill a 6 or 7 ounce tumbler.		

Stir with a spoon.

Popular Mixtures.

MAKING delicious fancy drinks, to which fancy names may be given.

Pine-apple Syrup	}	equal parts
Peach Syrup		
Orange Syrup	}	equal parts
Peach Syrup		

Raspberry Syrup.

Tufts' Raspberry Juice	½	gallon
or one-quart champagne-bottle full.		
Granulated Sugar	3¼	pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling.

Add enough simple syrup to make 2 gallons, and 2 ounces each of Tufts' Soda Foam, Tufts' Fruit Color, and Tufts' Fruit Acid.

Or,

Raspberry Juice, as per page 41	1	pint
Simple Syrup	2	quarts

Or,

Tufts' Extract Raspberry (artificial)	1	ounce
Simple Syrup	1	gallon
Tufts' Fruit Acid	1	ounce
Tufts' Fruit Color	½	"
Tufts' Soda Foam	1	"

Rose Syrup.

1 dram or more to a quart of cold simple syrup, according to taste.

Tufts' Sarsaparilla Color.

Also called Caramel and Sugar Color.

1 or 2 ounces to each gallon of syrups requiring an amber color.

Sarsaparilla Syrup.

Simple Syrup	1	gallon
Tufts' Extract Sarsaparilla	½	ounce
Tufts' Sarsaparilla Color	2	ounces

Sherbet Syrup.

Orange Syrup	} each equal parts
Pine-apple Syrup	
Vanilla Syrup	

Sherry-Cobbler Syrup.

TO 1 gallon good sherry add an equal measure of heavy simple syrup and 8 ounces lime juice.

Tufts' Soda Foam (Liquid).

MIX thoroughly 1 or 2 ounces in each gallon flavored syrup, according to the amount of foam desired.

Soda Lemonade.

Powdered Sugar	3	heaping teaspoonfuls
Juice of One Lemon.		
Soda-Water to fill tumbler.		

Stir with a spoon.

Spear-Beer Syrup.

Tufts' Spear Beer Extract	2	ounces
Simple Syrup	1	gallon

Strawberry Syrup.

Tufts' Strawberry Juice	⅓	gallon
or one-quart champagne-bottle full.		
Granulated Sugar	3¼	pounds

Dissolve the sugar in the syrup by slight heat, but *avoid* boiling.

Add enough simple syrup to make 2 gallons, and 2 ounces each Tufts' Soda Foam, Tufts' Fruit Color, and Tufts' Fruit Acid.

Equal parts Raspberry and Pine-apple Juices make an excellent substitute for Strawberry Juice the blend producing a fine flavor similar to the juice of wild strawberries. Or, —

Strawberry Juice, as per page 41 (or Raspberry and Pine-apple Juices, equal parts)	1	pint
Simple Syrup	2	quarts
Or, Tufts' Extract Strawberry (artificial)	1	ounce
Simple Syrup	1	gallon
Tufts' Fruit Acid	1	ounce
Tufts' Fruit Color	½	"
Tufts' Soda Foam	1	"

Swizzle Syrup.

Santa Cruz Rum	2	quarts
Lime Juice	1	pint
Pine-apple Syrup	1	gallon
Raspberry Syrup	2	quarts

Tea Syrup.

Green Tea	1	ounce
Black Tea	1	"

Steep in 1 pint of water, strain, and add 1 $\frac{1}{4}$ pounds of sugar.

Tonic Syrup.

Tufts' Tonic Extract	2	ounces
Tufts' Fruit Acid	2	"
Tufts' Soda Foam	1	ounce
Simple Syrup	2	quarts

Vanilla Syrup.

Tufts' Extract Vanilla (concentrated)	1 $\frac{1}{2}$	ounces
Simple Syrup	1	gallon

Or,

Simple Syrup	1	gallon
Tufts' Extract Vanilla (concentrated)	1	ounce
Tufts' Fruit Acid	$\frac{1}{2}$	ounce

Stir the acid with a portion of the syrup, add the extract of vanilla, mix.

Vanilla-Coffee Syrup.

Coffee Syrup	2	parts
Vanilla Syrup	1	part

Wild-Cherry Syrup.

Tufts' Wild Cherry Juice	$\frac{1}{5}$	gallons
or one-quart champagne-bottle full.		
Granulated Sugar	3 $\frac{1}{4}$	pounds

Dissolve the sugar in the juice by slight heat, but *avoid* boiling.

Add enough simple syrup to make 2 gallons, and 2 ounces each Tufts' Soda Foam and Tufts' Fruit Acid.

Wintergreen Syrup.

Tufts' Extract Wintergreen	$\frac{1}{2}$	ounce
Simple Syrup	1	gallon.

Tufts' Yellow Vegetable Color.

1 ounce to each gallon Banana, Orange, Orange Flower, and Pine-apple Syrups.

FORMULAS FOR SHAKEN DRINKS.

OBTAINED from the most successful dispensers, for the users of Tufts' Patent Lightning Shaker.

Clam-Juice Shake.

Bailey's Clam Juice	1 ½ ounces
Milk	2 "
Water	5 "

One pinch of salt and little pepper for each glass. To be well shaken. A delicious drink. Always use white pepper.

Egg Chocolate.

SAME as Egg Coffee, substituting chocolate for coffee syrup.

Egg Coffee.

Shaved Ice	¼ tumblerful
Fresh Eggs	1
Coffee Syrup	1 ½ ounce
Cream, genuine	2 ¼ ounces
Spring Water	5 "

Shake thoroughly. Draw small quantity soda-water, fine stream only.

Egg Lactart.

SAME as Egg Lemonade, substituting 1 ½ teaspoonfuls of lactart for the lemon juice.

Egg Lemonade.

Shaved Ice	¼ tumblerful
Fresh Eggs	1
Juice of one large Lemon	
Powdered Sugar	3 heaping teaspoonfuls
Spring Water	6 ounces

Shake thoroughly. Draw a small quantity of soda-water, fine stream only, and grate some nutmeg on top.

Egg Milk.

Shaved Ice	$\frac{1}{4}$	tumblerful
Fresh Eggs	1	
Rich Milk	3	ounces
Spring Water	5	"
Sugar, powdered	3	teaspoonfuls

Shake thoroughly. Draw small quantity of soda-water, fine stream only, and grate a little nutmeg on top.

Egg Nogg.

Sound Cider, Sherry, Rhine Wine, or Sour Catawba	6	ounces
Fresh Eggs	1	
Sugar	1	tablespoonful

Mix thoroughly. Draw small quantity of soda-water from fine stream, and grate a little nutmeg on top.

Egg Phosphate.

DRAW into a soda-water tumbler 2 ounces Maltese (red) Orange Syrup, add a fresh egg, a few squirts of acid phosphate, and a small piece of ice. Shake well.

Fill shaker with soda-water, using large stream only, and strain into a thin nine-ounce tumbler.

TAKE NOTICE. All drinks containing egg, if not strained, should be served with straws.

Milk Shake.

THIS beverage has sprung into great popularity in the South in a surprisingly short time. Wherever it has been properly introduced it has immediately become extremely popular.

It can be made of any flavor desired, but vanilla and chocolate are the most desirable flavors.

The Latest Formula for Milk Shake.

FILL the tumbler half full of shaved ice, add $1\frac{1}{2}$ ounces Milk-Shake Syrup (composed of equal parts of Vanilla and Pine-apple Syrups), fill tumbler almost full of milk, put in Lightning Shaker and shake well.

A pint of port wine added to a gallon of the Milk-Shake Syrup improves the drink.

Milk Shake, Chocolate.

Chocolate Syrup	1 ½ ounces
Rich Milk	5 “
Shaved Ice, to fill tumbler	

Shake well and shave some ice on top. Draw in some soda-water.

Milk Shake, Vanilla.

FILL tumbler half full of rich milk (if cream is added it makes a great improvement), to this add 2 or 3 teaspoonfuls of sugar. Shake in a few drops of extract vanilla. Fill tumbler nearly full of finely broken ice. Shake vigorously until the ice is melted, draw in some soda-water, place a long handled spoon in the tumbler and strain or serve with two straws.

Ocean Foam.

Shaved Ice	½ glass
Cream	½ ounce
Strawberry Syrup	½ “
Raspberry Syrup	½ “

Shake from handsome essence bottle a few drops each extract strawberry and extract raspberry, to give the drink extra flavor, and prevent consumers learning how the drink is made. Fill glass with soda-water, shake and serve with straws.

Charge fifteen cents.

Orange Ice-Cream Shake.

SAME as regular Milk Shake, with addition of tablespoonful of ice-cream, using Orange Syrup. This makes a delicious drink, with a creamy top.

(F. C. MCKENNA.)

Orange Phosphate.

DRAW into a regular soda-water tumbler, —

Maltese Orange Syrup	2 ounces
Fresh Eggs	1
Tufts' Acid Phosphate	1 dram

Add a small piece of ice, turn into a patent shaker and shake. Fill shaker with soda-water, drawing gently the large stream only so as to retain the gas. Remove cover of shaker and strain into thin tumbler.

Charge ten cents.

GINGER ALE, ROOT BEER, MEAD, ETC.

Arctic Mead.

Tufts' Arctic Mead Extract	1	gallon
Cold Water	14	gallons

Place the whole in a suitable fountain, and charge to 175 pounds.

NOTICE. — Before refilling the fountain, see that it is thoroughly washed out.

Syrup for Tumbler.

Simple Syrup (made 15 pounds sugar to the gallon)	1	pint
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Mix first with $\frac{3}{4}$ ounce extract lemon, then add 7 pints ice-water. Fill the tumbler half full of this compound *drawn from a syrup can*; then draw the mead, holding the glass so that the draught-tube nozzle is within half an inch of the bottom.

I furnish a silver-plated nozzle made expressly for this purpose, which can be attached to any of my small draught-tubes in place of the rubber nozzle.

To Dispense Mead as a Syrup.

Tufts' Arctic Mead Extract	2	pints
Lemon Syrup	3	"
Plain Syrup	3	"

Mix, and use 1 ounce to each glass of soda drawn. If desired, soda foam (1 ounce) may be added.

Carbonated Cream.

Powdered Sugar	$3\frac{1}{2}$	pounds
White of 6 Eggs		
White Glycerine	$\frac{1}{2}$	pound
Water	1	gallon

Dissolve sugar in water, add glycerine, and mix well. Take eggs (white), beat with a "Keystone" or "Dover" beater, and add to the dissolved sugar.

Then add to 5 gallons of water, and charge at 125 pounds pressure. Syrup and carbonated cream in one glass, shaved or cracked ice in *another* glass. On the ice draw the carbonated water and mix with the syrup and carbonated cream by pouring together.

Do not draw syrup and carbonated cream in glass and then turn on a fine or mixing soda stream, as sufficient water cannot by that means enter into the drink.

Do not add the ice to the syrup and carbonated cream, for it will flatten the drink, *but* put in separate glasses as directed. (P. J. MAGUIRE.)

Citrate Magnesia.

To Dispense from Soda Apparatus.

Magnesia Carbonate	6 $\frac{1}{4}$ Troy ounces
Citric Acid	12 $\frac{1}{2}$ " "
Syrup Citric Acid	30 fluid "
Bicarbonate Potash	1 $\frac{1}{4}$ Troy "

Dissolve citric acid and carbonate magnesia in 3 $\frac{1}{4}$ pints water; filter if necessary. A clear, light-yellow liquid is obtained. Use no heat. Then prepare syrup citric acid.

Syrup Citric Acid.

Citric Acid	$\frac{1}{4}$ Troy ounce
Oil Lemon	4 minims or drops
Syrup (7 $\frac{1}{2}$ pounds sugar in a finished gallon syrup)	2 pints

Rub citric acid to a fine powder in mortar, add oil lemon and small quantity of syrup: 1 to 2 ounces.

After thoroughly mixing, add remainder of syrup gradually. Now add bicarbonate potash, the solution of bicarbonate magnesia and citric acid, 5 $\frac{3}{4}$ pints DISTILLED water; shake vigorously, put fountain together without waste of time. Force in 50 to 75 pounds gas and dispense this in mineral-water tumblers at ten cents. (C. E. GATES.)

Champagne Soda.

Catawba Wine	2 $\frac{1}{2}$ gallons
Water	7 $\frac{1}{2}$ "
Simple Syrup	2 $\frac{1}{2}$ pints

Charge to 100 or 125 pounds.

Birch Beer.

Tufts' Birch Beer Extract	3 ounces
Tufts' Soda Foam	1 $\frac{1}{4}$ "
Simple Syrup	1 $\frac{1}{2}$ gallons
Water	8 $\frac{1}{2}$ "

Place in a steel or copper fountain and charge with carbonic acid gas to a pressure of 100 pounds.

To be drawn from a dispensing apparatus in the manner of soda-water but without syrup.

The beverage can be more readily dispensed by use of a beer pitcher made to draw from the bottom, by use of which the tumbler is partly filled with solid beverage, the remainder being drawn directly into the tumbler.

Ginger-Ale.

THERE are four ginger-ale extracts made, — one for dispensing and three for bottling.

“Tufts' Ginger-Ale Extract, Concentrated” is for use at the dispensing counter, and is a highly concentrated fluid extract.

“Tufts' Ginger-Ale Extract, Soluble,” is a concentrated fluid extract, which makes a clear and brilliant beverage for bottling.

“Tufts' Solid Belfast Ginger-Ale Extract” is a concentrated extract, about the consistency of dough; it has an aromatic flavor, and makes, when bottled, a clear and brilliant beverage.

“Tufts' Hub Ginger-Ale Extract,” is condensed to about the consistency of a heavy syrup, is easily handled, produces a large amount of goods, and bottles a clear, brilliant, and highly aromatic beverage.

In ordering, care should be taken to clearly indicate which is wanted.

Tufts' Ginger-Ale Extract, Concentrated	5 ½ ounces
Simple Syrup	1 gallon
Tufts' Fruit Acid	4 ounces
Tufts' Soda Foam	1 ounce

Place in a suitable fountain 1½ gallons of above syrup and water enough to make 10 gallons, and charge with gas to a pressure of 100 pounds.

To be drawn from the apparatus in the manner of soda-water, but without syrup.

The beverage can be dispensed more readily by use of a beer pitcher (made to draw from the bottom) by use of which the tumbler is partially filled with solid beverage, and the remainder drawn directly into the tumbler.

West India Lime Fruit Juice.

PREPARED expressly for ginger-ale.

6 to 10 ounces to the gallon. Less citric acid is used with lime juice than without.

New Orleans Mead.

Tonka Beans	2 ounces
Cloves	7 “
Cinnamon	7 “
Ginger	7 “
Nutmeg	7 “
Mace	2 “
Simple Syrup	20 gallons

DIRECTIONS. — Spices to be bruised in a mortar; those containing the most oil should be placed in a bag by themselves, and the others in another

bag. Immerse all in the syrup, and boil from 12 to 24 hours,—*the longer the better.*

Take 2 pounds of sassafras bark, add 3 gallons of water, and boil slowly until reduced to 2 gallons, 8 ounces allspice may be added to advantage.

After spices are sufficiently boiled, add the sassafras liquor and 2 gallons of honey. Put 5 quarts in a suitable fountain, add water to make 10 gallons and charge to 100 pounds pressure.

Peruvian, Ottawa, or Root-Beer.

Tufts' Peruvian Beer Extract	5 ½ ounces
Simple Syrup	1 gallon
Tufts' Fruit Acid	2 ounces
Tufts' Soda Foam	1 ounce

Place in a suitable fountain 1½ gallons of above syrup, and water enough to make 10 gallons, and charge with gas to a pressure of 100 pounds.

To be drawn from the apparatus in the manner of soda-water, but without syrup.

The beverage can be dispensed more readily by use of a beer pitcher (made to draw from the bottom) from which the tumbler is partially filled with solid beverage, and the remainder drawn directly into the tumbler.

Phosphated Sherbet.

Diluted Phosphoric Acid	2 ounces
Citric Acid	2 "
Granulated Sugar	10 pounds
Sherry Wine	1 gallon
Pure Water	9 gallons

Mix, and charge to 150 pounds. Dose, 6 ounces every half hour.

(O. J. PRICE.)

MINERAL-WATER FORMULAS.

THE whole quantity given in these formulas is for 10 gallons of water. Shake thoroughly before using. Place in a suitable fountain, and charge to a pressure of 100 pounds.

Apollinaris Water.

To make Twenty-Five Gallons.

Water 25 gallons

Put in fountain and charge with 25 pounds gas. Then add to water in fountain, —

Bicarbonate of Soda	5	ounces
Common Salt	3½	"
Glauber's Salt	2	"

Take 2 quarts of lime (or marble dust), 1 quart of muriatic acid, and mix together, and add more marble (or lime) until it stops boiling. Then add water sufficient to make it indicate 25° on hydrometer.

No. 2. — Magnesia can be used instead of lime or marble. If magnesia is used it should indicate 15° on hydrometer. Filter both solutions through paper. 2 ounces of either solution is then added to water in fountain. Then charge.

Before adding the bicarbonate of soda let off the gas of first charge, then recharge as directed.

Solution for Ten Gallons Bareges Water.

Crystallized Sulphide Sodium	4	grains
Carbonate Soda	4	"
Common Salt	2	"
Water	2½	pints

Solution for Ten Gallons Brighton-Selters Water.

Chloride Calcium	1¼	ounces
Carbonate Soda	1¼	"
Common Salt	1¼	"
Water	2½	pints

Solution for Ten Gallons Bussang Water.

Carbonate Soda	70	grains
Chloride Calcium	13	"
Chloride Magnesia	7	"
Sulphate Iron	1	grain
Arsenate Soda	¼	"
Water	2½	pints

Solution for Ten Gallons Carlsbad Water

Crystallized Sulphate Soda	4	scruples
Crystallized Sulphate Magnesia	10	grains
Crystallized Carbonate Soda	1	scruple
Common Salt	11	grains
Crystallized Chloride Calcium	10	"
Tartrate Potash and Iron	1	grain
Water	2 ½	pints

Solution for Ten Gallons Cheltenham Water.

Sulphate of Magnesia	1	ounce
Rock Salt	2	ounces
Sulphate of Soda	1 ½	"
Water	10	gallons

Solution for Ten Gallons Congress Water.

Common Salt	7 ¾	ounces
Hydrate of Soda (caustic soda)	23	grains
Bicarbonate of Soda	20	"
Calcined Magnesia	1	ounce
Water	2 ½	pints

Friedrichshall Water.

THE genuine water is imported from Germany, but for some years there has been a considerable trade done in the manufactured article.

Bicarbonate of Soda	7/8	ounce
Sulphate of Soda (crystallized)	1 ¼	ounces
Sulphate of Potassium	3/8	ounce
Common Salt (pure)	10 ¼	ounces
Sulphate of Magnesia (crystallized)	20	"
Chloride of Calcium (anhydrous)	1	ounce
Water (distilled)		sufficient

Mix the bicarbonate and sulphate of soda with the sulphate of potassium by rubbing them together in a mortar; add the sulphate of magnesia, and dissolve in 3 pints of water; then add the other salts with sufficient water to form a solution; pour the liquid into a fountain containing 12 gallons of water, and charge.

Hunyadi-Janos Water.

THE Hunyadi-Janos Water is an efficient, safe, and agreeable purgative in many chronic cases. At first it was made according to Liebig's analysis of the natural water, but it was perceived to be too weak, and it failed to produce

purgative action. Ultimately it was made thrice the given strength, according to the following receipt: —

Sulphate of Magnesia	514.92 grains
Sulphate of Soda	519.54 “
Sulphate of Potash	2.76 “
Common Salt	39.15 “
Bicarbonate of Soda	15.60 “
Water	16 ounces

Dose, 2 ounces and upwards.

It will be observed that the chloride of calcium is omitted, but the proportion is so small that even when it was included there was no difference in the action. This inexpensive mixture, made for a penny a quart, can be effectually recommended. It will be found to possess every advantage attributed to the natural variety, the necessity for buying which seems to be done away with. (DR. MATTHEW CHARTERIS in *Lancet*.)

Solution for Ten Gallons Kissingen Water.

Bicarbonate Soda	1 dram
Common Salt	8 ounces
Muriate Ammonia	4 grains
Sulphate Soda	2 drams, 2 scruples
Sulphate Magnesia	2 ounces
Carbonate Magnesia	4 drams, 1 scruple
Water	2½ pints

Solution for Ten Gallons Leamington Water.

Common Salt	4 drams
Crystallized Chloride Calcium	5 scruples
Crystallized Chloride Magnesia	4 “
Crystallized Sulphate Soda	32 grains
Hydrosulphuretted Water	12 ounces
Water	2½ pints

Solution for Ten Gallons of Magnesia Water.

Tartaric Acid	350 grains
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Dissolve with 5 gallons warm water. Add to above, —

Carbonate (or block) Magnesia	5 ounces
Sugar (pure granulated)	3½ pounds
Lemon Oil (pure)	12 drops
Filtered Water (cold)	5 gallons

Solution for Ten Gallons Magnesian Water.

Carbonate Magnesia	2	drams
Water	2 ½	pints

Solution for Ten Gallons Naples Water.

Crystallized Carbonate of Soda	1	dram
Carbonate Magnesia	32	grains
Hydrosulphuretted Water	12	ounces
Water	2 ½	pints

Solution for Ten Gallons Pullna Water.

Sulphate Soda	7	drams
Sulphate Magnesia	1 ¾	ounces
Carbonate Soda	1	scruple
Chloride Calcium	½	dram
Chloride Magnesia	½	"
Common Salt	½	"
Water	2 ½	pints

Solution for Ten Gallons Pyrmont Water.

Sulphate Soda	1	scruple
Sulphate Magnesia	1	"
Chloride Magnesia	13	grains
Chloride Calcium	2 ½	scruples
Carbonate Soda	1 ½	drams
Sulphate Iron	4 ½	grains
Water	2 ½	pints

Solution for Ten Gallons Sedlitz Water.

Crystallized Sulphate Soda	4 ½	drams
Water	2 ½	pints

Solution for Ten Gallons Seltzer Water.

Muriatic Acid (chemically pure)	5 ¼	ounces
Marble Dust	½	ounce
Carbonate Magnesia	7	drams
Bicarbonate Soda	5 ½	ounces

Add the acid to 2 ½ pints of water. Dissolve the marble in the mixture; then add magnesia, and after one hour the bicarbonate soda.

Solution for Ten Gallons Spa Water.

Crystallized Carbonate Soda	11	grains
Crystallized Chloride Calcium	4½	"
Crystallized Sulphate Magnesia	11	"
Crystallized Sulphate Iron	3	"
Water	2½	pints

Solution for Ten Gallons of Star Water.

Common Salt	8	ounces
Caustic Soda	25	grains
Calcined Magnesia	1	ounce
Bicarbonate Soda	20	grains

First, dissolve the caustic soda in 3 pints of water, then add the soda, magnesia, and salt, then filter.

Add to this 9½ gallons of water and charge to 150 pounds pressure.

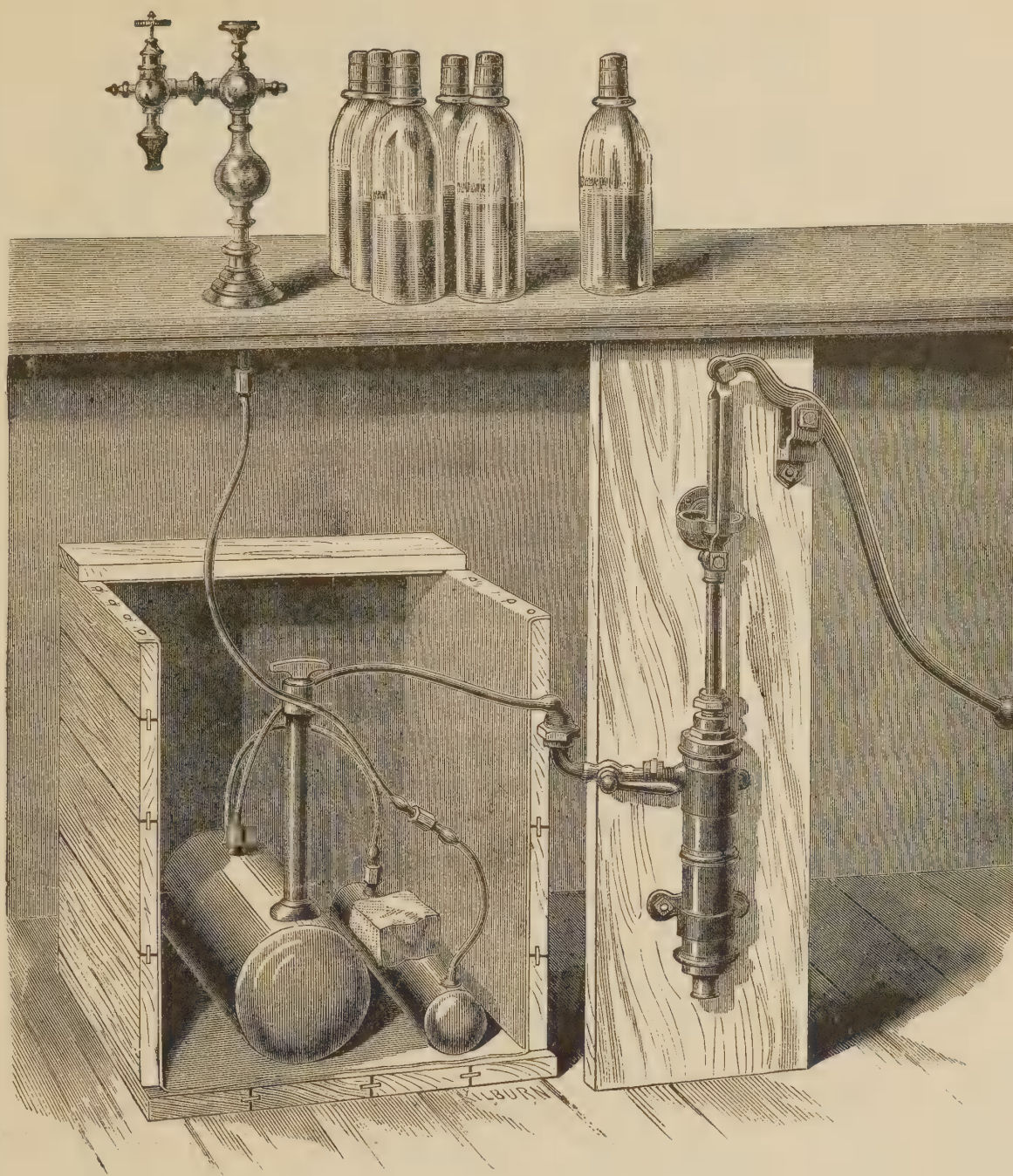
Solution for Ten Gallons Vichy Water.

Bicarbonate Potash	3	drams
Phosphate Soda	3	"
Common Salt	3	"
Sulphate Magnesia	6	"
Bicarbonate Soda	7	ounces

Zoedone.

THIS is a most pleasant and refreshing drink, in which the peculiar iron taste is very successfully masked by a remarkable flavoring syrup, the ingredients of which are kept secret. The quantity of the acting ingredients in each small champagne-bottle are given by the patentee as follows: —

Calcii Phosphas	2	grains
Ferri Phosphas	1	"
Potassi Phosphas	1.5	"
Sodii Phosphas	1.12	"



THE VILLAGE ATMOSPHERIC SODA-WATER FOUNTAIN.

THESE directions with slight modifications are applicable to all forms of atmospheric apparatus.

To Operate the Fountain.

CONNECT the parts as shown in the engraving; then unscrew the cap on the large cylinder, and by means of a funnel pour in two gallons of the solution of bicarbonate soda. Then pump in enough air to give sufficient pressure, and close the cock attached to the pump. Add about 2 ounces of syrup to the tumbler and draw from the counter draught-tube enough to fill the tumbler. It should be drank instantly.

The use of very cold water in the cylinders and application of ice in the box is essential for the best quality of beverage. Owing to the variable strength of materials, it is sometimes advisable to vary the proportion of bicarbonate of soda. The beverage when drank should be slightly acid.

Solution for Cylinder of Atmospheric Fountain.

Bicarbonate of Soda	6 ounces
Water	8 gallons

Plain or Simple Syrup.

SIMPLE syrup is made by dissolving 10 pounds of sugar in 1 gallon of water. This may be done by heat or by stirring in cold water. The addition of soda foam or of the whites of 2 eggs to each gallon syrup causes foam to be retained on the top of the glass when the beverage is drawn.

Ginger Syrup.

Simple Syrup	1 quart
Tufts' Extract Ginger	1 ounce
Tartaric Acid	1 $\frac{1}{4}$ ounces

Lemon Syrup.

Simple Syrup	1 quart
Tufts' Extract Lemon	$\frac{1}{4}$ ounce, or 2 teaspoonfuls
Tartaric Acid	1 $\frac{1}{4}$ ounces

Orange Syrup.

Simple Syrup	1 quart
Tufts' Extract Orange	$\frac{1}{4}$ ounce, or 2 teaspoonfuls
Tartaric Acid	1 $\frac{1}{4}$ ounces

Pine-apple Syrup.

Simple Syrup	1 quart
Tufts' Extract Pine-apple	$\frac{1}{4}$ ounce, or 2 teaspoonfuls
Tartaric Acid	1 $\frac{1}{4}$ ounces

Raspberry or Strawberry Syrup.

Simple Syrup	1 quart
Tufts' Extract of Raspberry or Strawberry	$\frac{1}{4}$ ounce, or 2 teaspoonfuls
Tartaric Acid	1 $\frac{1}{4}$ ounces
Tufts' Fruit Color	2 teaspoonfuls

Sarsaparilla Syrup.

Simple Syrup	1 quart
Tufts' Extract Sarsaparilla	$\frac{1}{4}$ ounce, or 2 teaspoonfuls
Tartaric Acid	1 $\frac{1}{4}$ ounces

Vanilla Syrup.

Simple Syrup	1 quart
Tufts' Extract Vanilla	$\frac{1}{4}$ ounce
Tartaric Acid	1 $\frac{1}{4}$ ounces

DIRECTIONS FOR SETTING UP AND OPERATING THE TORRID SODA-WATER APPARATUS.

TO connect the Chimborazo, Aladdin, Etna, Vesuvius, Phenix, or Salamander if a gas or coal-oil stove is to be used for heating cut a hole twelve inches in diameter in the counter where the apparatus is to be placed and pass the pipes down through it. Attach the gas stove to the gas-supply.

An adjustable stand is furnished, with a large pan in which the gas or oil stove is placed. This stand rests upon the floor under the counter, and can be adjusted so as to raise the stove to any desired height.

By simply removing a pin the stove can be lowered for cleaning and lighting.

A hole one foot in diameter is required in the counter slab.

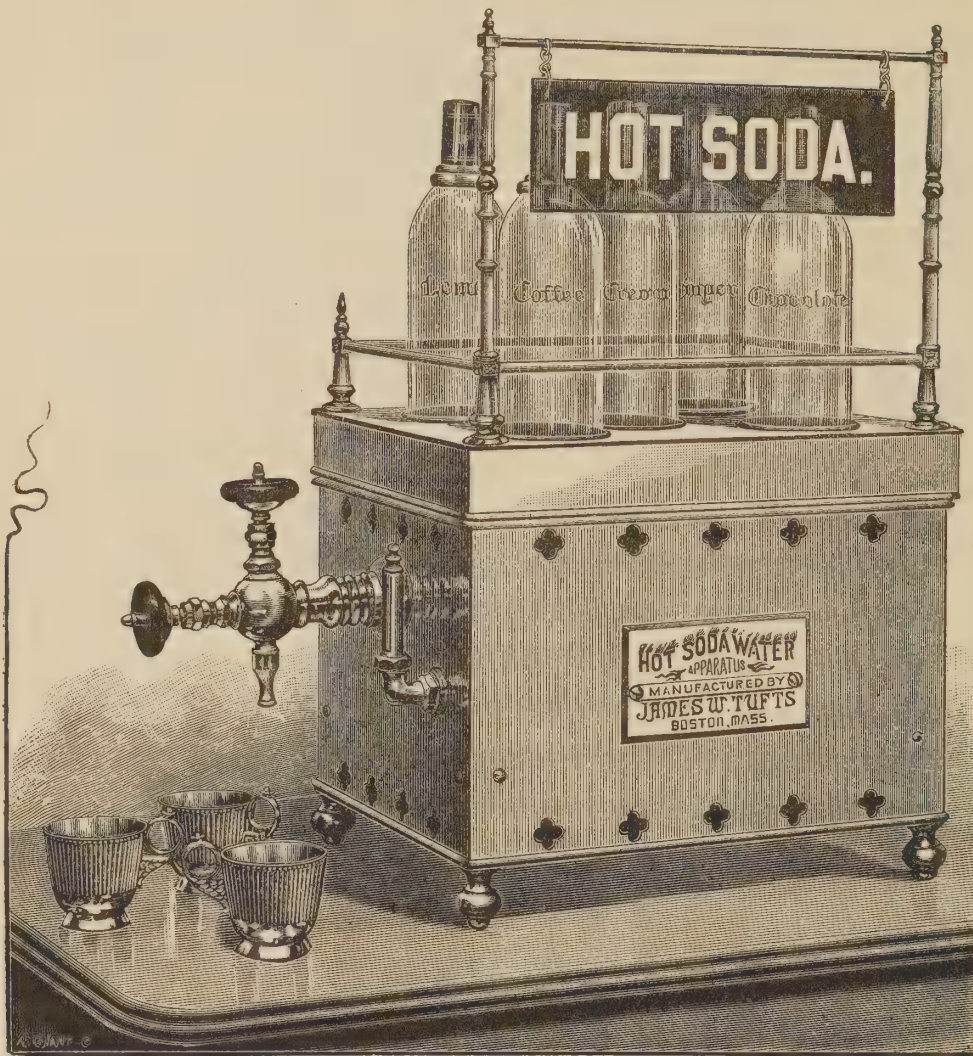
The use of this stand prevents the heat from breaking the counter slab, and also prevents soot and smell. The hole which it necessitates in the counter slab provides the large amount of ventilation necessary to enable these stoves to work in a satisfactory manner.

When the hot soda-water apparatus is removed, at the end of the season, the hole and the water connection can be used for a Scylla or other tumbler washing device.

When adjusted for use the top of the gas stove should be in contact with the bottom of the water-bath, but the oil stove gives better satisfaction when the top of stove is one inch below the bottom of bath. The oil stove can be filled and cleaned without taking it from the pan. It is advisable to always lower the stove for lighting. After the water-bath is heated, the slightest possible flame is sufficient to maintain the necessary heat. If steam is to be used, a steam-coil, with circulation pipe leading into the standing drain, is provided. Five pounds pressure of steam is sufficient. Connect the aqueduct water with the supply-pipe attached to the cylinders, and the outlet-pipe from the cylinders with the draught-tube or counter apparatus. Sufficient water should be kept in the water-bath to cover the cylinders. The water-bath can be readily filled by opening the cold-water valve of the two-wheel draught-tube, which is connected with the bath by the cold-water pipe.

The height of water in the bath can be readily seen in the glass gauge. A standing waste-pipe prevents overflowing. It may be of any length, but must not be trapped by bending or placing in water. An immersion of one-quarter of an inch will trap it. Steam will not blow from the open pipe as it is condensed in descending and drops in water in the pail or other receptacle placed to receive it. If too much heat is applied the steam finds an open vent in the standing waste-pipe and will be condensed as above explained. The boiling of

the water is indicated by the rising and falling of the water in the water-gauge. To lessen the heat simply reduce the flame, and if necessary open the cold-



SALAMANDER.

Price of Salamander is given in Catalogue of Torrid Soda-Water Apparatus, which will be sent on application, free by mail, to any one thinking of purchasing.

Broad Street, Boston, is the best. When dry, rub off and polish with clean waste. All the copper in the Phenix can be cleaned in five or ten minutes. Putz Pomade, which is now very generally introduced, is also recommended for cleaning copper.

To connect the Geyser, Hot Spring, or Standard, it is simply necessary to attach the gas stove to the gas-supply, and place the apparatus over it bringing the top of stove in contact with the water-bath. If an oil stove is used it should be adjusted so that the top of stove is one inch from the bottom of the water-bath. Connect the aqueduct water with the supply-pipe attached to the apparatus on the left-hand side facing the apparatus. The two pipes running from the right-hand end facing the apparatus are to be connected with the draught-tube, the pipe nearest the front being the inlet that supplies

water valve of the draught-tube, thus adding water to the bath. If it is desired to remove the hot-air chamber, first remove the syrup-jars, as being heaviest at the front they are liable to slip out and fall to the floor.

To clean the planished copper of the Phenix or Salamander, make a solution of one ounce oxalic acid in a pint of water. Wet some cotton waste with the solution and rub over the copper sufficiently to wet it. With a dry piece of waste rub over with tripoli. Drew's tripoli, put up by May & Co., No. 1

hot water, and the other the return or cold-water pipe which is used in filling the water-bath, and to waste the water which has become chilled by standing in the supply-pipe and draught-tube. When the single wheel draught-tube is ordered the return pipe is not furnished, but a branch and cock are arranged by means of which the bath can be supplied.

The Standard is the only style which is not supplied with a water-joint. In the Chimborazo, Vesuvius, Phenix, Salamander, Geyser, and Hot Spring, the water-joint is filled at the same time that the bath is filled, by simply opening the cold-water valve. In the Etna and Aladdin the condensation of steam has been found sufficient to supply the water-joints.

Where there is no supply of water under pressure a portable fountain and air-pump should be used. Fill the fountain two-thirds full of water, and pump in air until the pump works hard, which will give 40 to 50 pounds pressure. The pump can then be detached, and the fountain attached to the hot soda-water apparatus. If the pressure becomes too light before the fountain is empty, it is only necessary to disconnect the hot soda-water apparatus, connect the pump and force in more air. If a double-cock is used on the fountain, disconnecting becomes unnecessary.

DIRECTIONS FOR MAKING AND DISPENSING HOT SODA-WATER.

GOOD drinks are a prime necessity in securing permanent popularity. The public are too good judges of coffee and chocolate to take kindly to poor

drinks; but a superfine cup of either coffee or chocolate, prepared as with care it *can* be prepared, is very tempting in cold weather. The passer-by, who would not for a moment think of going to a restaurant for such refreshment, will always be tempted to stop by the sight of a handsome apparatus from which he knows a delicious drink can be instantly served.



The popular list of cold soda-water flavors are flat and insipid when drawn hot. Coffee, chocolate, ginger tonic, beef tea, clam juice, egg phosphate, and lemon-

ade, made from the lemon or from lemon juice, when properly prepared are delicious hot drinks. Coffee and chocolate syrups should be prepared with a light, simple syrup, five pounds of sugar or less to a gallon of water. Corn-starch, well and carefully cooked, should be added to the chocolate to give it body.

In dispensing, put sufficient cream into the cup first, then coffee or chocolate syrup enough to nearly fill the cup, and mix with the stream from the draught-tube. A pitcher of cream should be kept on the counter to reduce the temperature if necessary. Some dealers use whipped cream as a novelty.

In serving use a silver or china cup, cut glass, or silver pepper and salt bottles, and silver-plated spoon-holder with bar-spoons. These articles should be of attractive appearance, for the popularity of such beverages depends largely upon luxurious surroundings.

The best drink mixer in use is the Lightning Shaker; it does the work thoroughly and quickly, and does not suggest the bar-room. It is made to shake one, two, three, or four drinks as desired. The novelty of its operation makes it very attractive. It can be operated by hand, or by electric or water motor.

Plain or Simple Syrup for Hot Drinks.

Sugar	20 pounds
Water	4 gallons

JAMES W. TUFTS' BOOK OF DIRECTIONS.

Heat the water and sugar sufficiently to dissolve the sugar, and strain through flannel cloth.

The syrup may be made with cold water by repeated stirring, or by percolating the water through sugar placed in a vessel with a perforated bottom.

Tufts' Liquid Beef.

Tufts' Liquid Beef 2 teaspoonfuls
Shake from the bottle through a squirt-tube.

Hot Water, enough to make 6 ounces

Serve in a fine china cup.

Tufts' Celery Salt is an agreeable addition, and greatly improves the beverage.

Tufts' Celery Salt.

THE finest possible addition to hot beef tea. The odor of hot beef tea, so offensive to many, is thoroughly disguised by the addition of a little celery salt. Serve from a handsome individual salt castor.

Beef-Tea Extract.

Liebig's Extract Beef 5 ounces
Hot Water 1 pint
Tincture Black Pepper 1 ounce

Mix beef in hot water, then add tincture. Use of this 2 drams or 2 teaspoonfuls to each cup, and fill cup with hot water. Salt to suit taste.

Tincture of Black Pepper is made as follows, —

Whole Black Pepper (crushed) 3 ounces
Alcohol 1 pint

Steep and filter. The object of this method is to keep the tea clear of sediment.

Beef and Celery.

Liebig's Fluid Extract of Beef 8 ounces
Hot Water 1 pint
Extract of Celery 1 dram
Sarsaparilla Color (caramel) 1 "

Mix beef in hot water, and add celery and color. Use a shaker top in the bottle, as there is a sediment in the beef extract which necessitates shaking.

In a six or seven ounce cup shake about 2 teaspoonfuls of the beef extract prepared as above, draw on this sufficient hot water, add salt to suit taste, stir with a spoon. Shake a little white pepper on top. Charge ten cents.

Liebig's extract is sold by all wholesale druggists. Pound bottles are the cheapest size to buy.

Tufts' Double Vanilla-Chocolate Paste.

PREPARED especially for soda-water syrup, by a new process, and warranted to keep.

A finer chocolate syrup for either cold or hot soda-water can be made from this paste than from any other preparation of cocoa, in less time and with less labor. The chocolate will remain in suspension in syrup made from this paste.

Put up in pound cans with full directions. Each pound will make one gallon chocolate syrup.

DIRECTIONS FOR USE. — Dissolve the contents of one package in 5 pints of warm water, with 3 pounds of sugar, and strain while hot through flannel or very fine sieve. Pour a little cream into the cup, half fill with hot chocolate, nearly fill with hot plain syrup, and mix with the stream from the draught-tube.

Whipped Cream.

WHIP together the whites of 3 eggs and $\frac{1}{2}$ pound powdered sugar, and add a teaspoonful to each cup of chocolate as a finishing touch in serving.

Keep this on the counter in a whipped-cream bowl.

Chocolate Syrup.

Baker's Vanilla Chocolate	$\frac{1}{2}$ pound
Baker's Commercial Chocolate	1 "
Corn-Starch	6 ounces
Hot Water	2 gallons
Simple Syrup	3 quarts

Dissolve the chocolate in hot water, using great care not to scorch it. Mix the corn-starch with cold water. Before adding the corn-starch see that the chocolate is thoroughly dissolved, and brought to a boiling heat; then add the corn-starch and boil well, that it may be sufficiently cooked to prevent any starchy taste. Strain through a sieve to remove coarser particles. When replenishing the apparatus, be sure to strain again, using a coarser strainer. Dispense hot and keep the cream on the counter to reduce temperature.

In dispensing it, sufficient cream should be put into the cup first; add the chocolate, then sweetening if necessary, and mix with the stream from the draught-tube.

Clam Juice

Bailey's Concentrated Clam Juice	1 $\frac{1}{2}$ ounces
Hot Milk	2 "
Hot Water	4 "

One pinch of salt and a little pepper for each cup. Always use white pepper.

Tufts' Condensed Coffee Extract.

WARRANTED strictly pure male berry Java Coffee.

Use 8 or more ounces coffee extract to 1 gallon simple syrup, made with 5 pounds of sugar and 1 gallon of water.

Pour a little cream into the cup, half fill with hot coffee, nearly fill with hot plain syrup, and mix with the stream from the draught-tube.

Coffee Syrup.

COFFEE syrup may be made by adding boiling water from the apparatus to 1 pound of coffee, placed in a suitable filter coffee-pot until 2 quarts of infusion are obtained. Add to this 3 pounds of sugar.

In dispensing, first put sufficient cream into the cup, add the coffee, then sweetening if necessary, and mix with the stream from the draught-tube.

Egg Phosphate.

THIS makes a really excellent hot drink, aside from its medicinal properties.

Lemon Syrup	1 ½ ounces
Fresh Eggs	1
Tufts' Acid Phosphate, or Tufts' Citric Phosphate (solution) 1	dram

Mix well with shaker and fill with hot water from draught-tube. Have water a few degrees below boiling point, to prevent the egg from becoming stringy. Serve phosphate from an essence bottle.

Tufts' Acid Phosphate.

TUFTS' ACID PHOSPHATE is unexcelled. Serve from an essence bottle, squirting about 1 dram into the tumbler after drawing the desired syrup.

Tufts' Citric Phosphate.

AN exceedingly wholesome acid phosphate. A solution for dispensing is made as follows:

Citric Phosphate	6 ounces
Boiling Water	15 "

Dissolve thoroughly, and filter through fine flannel, felt, or filter paper. Serve from an essence bottle squirting about 1 dram into the tumbler after drawing the desired syrup.

Ginger-Cordial Syrup.

GINGER is a wholesome hot drink, but not a very palatable one. In hot Ginger Cordial, however, a delicious non-alcoholic combination is presented. It is

JAMES W. TUFTS' BOOK OF DIRECTIONS.

a new beverage which is bound to prove a seller. The Ginger Cordial is somewhat difficult to prepare, and consequently is offered only in the finished syrup.

Ginger Cordial Syrup (hot)	1 ½ ounces
Hot Water	6 “

Serve in a fine china cup. Milk and aromatic spices may be added if desired.

Ginger.

Tufts' Extract Jamaica Ginger (from essence bottle) . . .	½ dram
Hot Plain Syrup	3 ounces

Mix with stream from the draught-tube.

Lemon.

LEMONADE is of course best when the fruit is squeezed into the glass; but when this is not possible, lemon juice previously prepared is the best substitute.

Von Laer's Lemon Juice (from essence bottle)	1 ounce
Hot Plain Syrup	4 ounces

Mix with stream from draught-tube.

Tufts' Nerve Tonic.

NERVE tonic makes a very agreeable hot drink. It should be made into a syrup, and the syrup must not be heated, consequently it should be a heavy syrup, made with 10 pounds of sugar to 1 gallon of water.

Tufts' Nerve Tonic Extract	3 ounces
Tufts' Sarsaparilla Color	1 ½ “
Tufts' Soda Foam	1 ½ “
Plain Syrup (heavy)	1 gallon

Draw 1 to 2 ounces into the cup and fill with hot water from the draught-tube.

HINTS.

As large a sale can be had for hot drinks as for cold, if the same methods are adopted.

There is never a demand for anything until the demand is made. Whoever first makes the demand receives the greatest profit.

The passer-by who would not think of going out of his way for a hot drink, can be attracted by a showy fountain, and a white-coated attendant standing ready to promptly serve him.

Elegant and luxurious appointments are attractive to every one.

The manipulation of drinks, tossing, shaking, etc., not only improves the quality, but is exceedingly attractive to the customer. The shaking machine

does the work thoroughly and attractively, and is not suggestive of the bar-room.

Cups washed in the customers' sight are an assurance of cleanliness.

Prompt service is of more importance in dispensing drinks than in any other branch of business. A customer will not wait with patience for a drink.

It is of prime necessity that the beverages be good, that is, rich and palatable. If washy drinks are dispensed the business will be a failure. To obtain body and richness, it is necessary to draw at least twice as much syrup for hot soda-water as for cold. *Hot syrups are necessary*, because the volume of syrup is so great that if cold it would cool the drink to an unpalatable degree.

A drink should not only be nice, but should be attractive in appearance.

One new and delicious drink, well advertised, and placed attractively before the public, has in several instances made a fortune.

Cold soda-water as well as hot can be sold in winter. When one alone would barely pay, the two together will prove quite profitable.

Mineral waters are in demand the year round.

VARIOUS APPLIANCES FOR USE AT THE DISPENSING COUNTER.

Directions for Setting Up the Maelstrom.

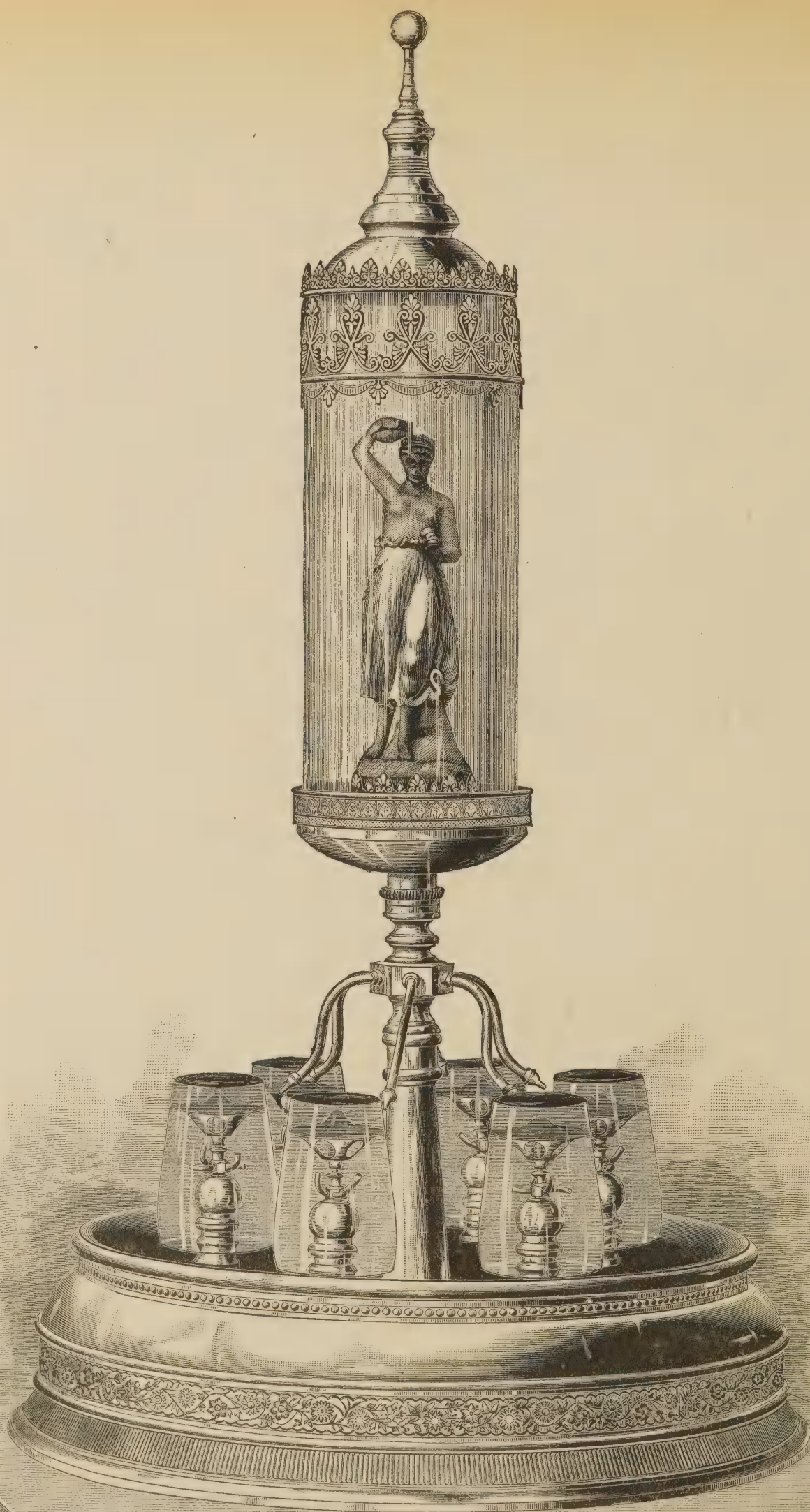
THE diameter of the Maelstrom with new high basin is twenty-two inches. It requires two holes in the counter, — one at the centre of the tumbler-washer, and one three and three-fourths inches from first hole. Each hole should be two inches in diameter and the distance between them should be measured from the centre of one hole to the centre of the other.

Having supply and drain connections adjusted, place the washer in the desired position and screw the water attachment jet-pipe into the small threaded opening in the faucet; then, with the large union-nut connect faucet with washer.

Screw home the milled-nut, in upper pan, to pack jet-pipe. Place tumblers on rests and turn on water gradually. When all the tumblers are revolving, not too fast, turn on small faucet connected with water attachment.

Too much pressure causes the valves to open automatically, when water and pressure are both wasted and thereby the force is lost, which produces the attractive ringing sound in the glass dome. At the bottom of each washing attachment is located a strainer. Keep these strainers clear.

In case of obstruction in any one jet, the whole water pressure can be turned on it by taking the glasses off the others. This will drive out any ordinary obstruction.



THE MAELSTROM.

NEW PATENT REVOLVING TUMBLER-WASHER.

Directions for Styles No. 1 and No. 2 Tumbler-Washer.

THE No. 1 size requires but two small holes in counter near centre, and measures twenty-three inches in diameter.

THE No. 2 size requires a sixteen-inch hole, and measures twenty and three-fourths inches in diameter.

In setting up the tumbler-washer, see that the springs all work freely. In shipping, the bearings are liable to corrode, as they are fitted very close to prevent the escape of water from around the spindle. If, therefore, they do not work freely, unscrew the cap that holds the small jet, and clean the bearings thoroughly, so that the valve will work freely, and close off the water as soon as the tumbler is removed. Whenever the valve does not close promptly when the tumbler is removed, it is only necessary to take it apart and to clean the working parts.

Supply-Cock.

THE supply-cock should be regulated to operate the washer with the smallest amount of water. This is *all important*, as the operation of the washer is *spoiled by too much pressure*. Water is wasted, the valves depress with difficulty and will not stay open; the tumblers *race*, and damage to them and the washer follows. So obey the injunction and save annoyance, water, and expense.

When water-fountain is attached to washer, the supply-cock is double. The small cock supplies the water-fountain, and the large one the washer, so that either can be shut off independently of the other.

Jet-Pipes.

EACH of the jet-pipes is held in position by a locking-nut at its junction with the globe. To change the direction of any of the streams, unscrew the lock-nut and point the jet as desired, resetting the nut tightly in place. In the 1883 tumbler-washer, a single jet projecting from the tube on top of the rose propels the fan. Of course if the stream does not strike the fan it will not revolve. The jets are properly adjusted by us, but to regulate them a pair of small gas-pliers will be required as they are threaded tightly in order to avoid accidental loosening. The stream should always strike the *propeller on the left*. The jets from the outside tubes can be adjusted to any degree of nicety and *if required, regulated to hold the tumblers stationary*; so that there is no excuse for racing and breaking tumblers.

No. 4 tumblers are preferred to No. 3 for use on a tumbler-washer.

Water.

WHERE water is expensive, and when it would not be necessary to run all the washers, the water to the inside of the tumbler can be cut off by fastening up

the valve of its washer; a good way to do would be to substitute a strong spring for the weak one in regular use, so that the weight of the tumbler would not depress the valve. By this plan all the tumblers would still *revolve* by their outer streams, and the inside streams could be cut off from the tumblers not required for use.

Tumbler Support.

THE pins on which the glasses rest fit loosely in their sockets, and can be reversed, if required.

Cleaning.

THE bearings of the fans should be cleaned occasionally (quite often in a new washer), and the parts screwed well home on replacing.

Strainer.

THE strainer is a cylinder of gauze, located at the top of standard inside of globe, — both removable by unscrewing. When clogged, remove strainer and cleanse thoroughly, using a brush and boiling water, if necessary. On replacing do not screw it on so tightly as to wrench it.

Globe.

SCREW it on merely enough to hold its position and so that the jets will strike the tumblers on their receding sides, and the *nearer* to the sides the *faster* they will revolve. It is objectionable, however, to have them rotate too rapidly.

Regulating-Valve.

THE valve of the regulating-valve, on the side of the standard, is held to its seat by a coiled spring, and is regulated by screwing the ball casing up or down, and should be so adjusted that it will commence to open on removing one or two tumblers. It will open wider as remaining tumblers are removed, and so relieve the pressure that the last tumbler will remain in full operation. On extremely light pressures the ball casing should be screwed well upward. No water should escape when all the tumblers are operating. If water escapes it shows too much pressure, and if the tumblers do not revolve and the water still escapes, it shows that the ball casing needs raising, or that its spring wants renewing.

THE WHIRLPOOL TUMBLER-WASHER.

Directions for Setting, when Arranged to be Operated by the Foot.

First. Cut a hole in the counter five and five-eighths inches in diameter, and at opposite sides of the hole cut grooves of proper size to receive the small supply-pipes.

Second. Place the tumbler-washer in the hole with the flange resting upon the slab or counter.

Third. Place the treadle upon the floor in such a position that it will be plumb under the valve, and fasten it with screws.

Fourth. Uncoil the wire attached to the valve-spindle, and pass the end through the central hole in the treadle, bringing it up through the second hole, and drawing tight until the treadle is one-half inch from the floor, and make fast by twisting the end around the standing part of the wire.

Fifth. The plumber can now connect the supply and drain pipes with the couplings sent with the tumbler-washer and screw them to the washer.

Directions for Operating.

PLACE a tumbler in the washer, allowing it to rest upon the bottom of the basin, and open the valve by depressing the treadle with the foot.

Directions for Setting, when Arranged to be Operated by Hand.

First. Cut a hole in the counter five and five-eighths inches in diameter, and at opposite sides of the hole cut grooves of proper size to receive the small supply-pipes.

Second. Remove the valve by means of an apparatus wrench and the hexagonal nut.

Third. Tip the washer so that the valve-arm will pass through the hole and under the slab, allowing the basin to go into place with the flange resting upon the slab or counter.

Fourth. Drill a small hole through the slab for the valve-spindle.

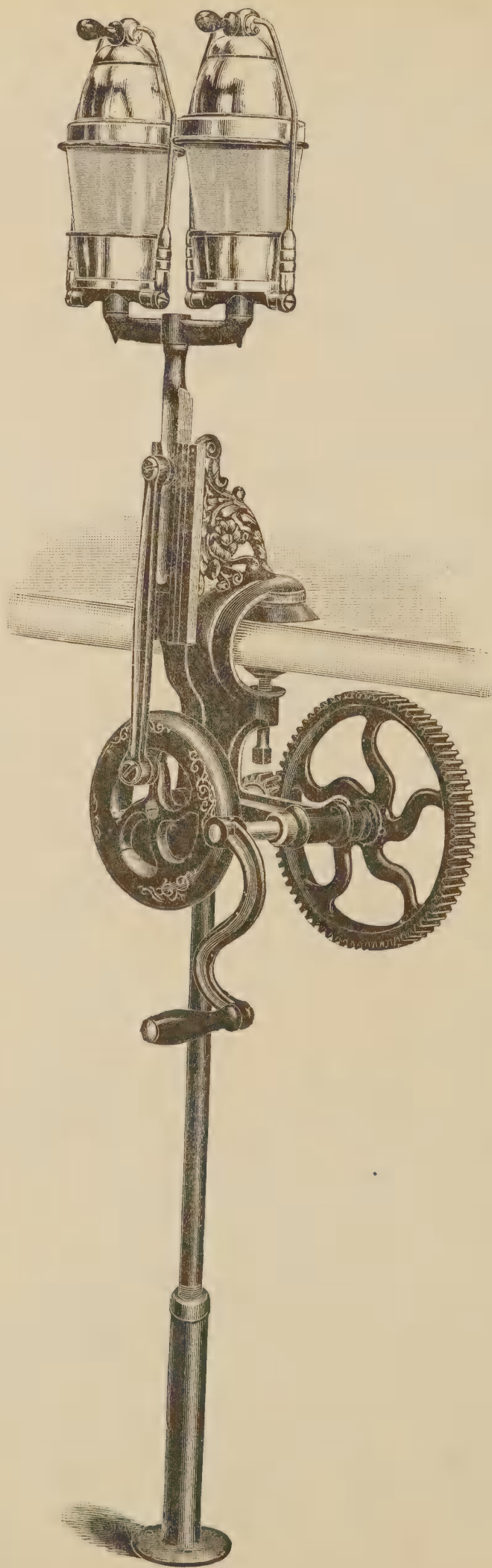
Fifth. Push the spindle up through the hole, and connect the valve with the arm, screwing it firmly to place.

Sixth. Place the socket-cap, or button, on the end of the spindle.

Seventh. The plumber can now connect the supply and drain pipes with the couplings sent with the tumbler-washer and screw them to the washer.

Directions for Operating.

TO open the valve, depress the button on the end of the spindle with the hand.



HIGH-SPEED DOUBLE LIGHTNING SHAKER,
WITH COUNTER-BRACE.

DIRECTIONS FOR TUFTS' LIGHTNING SHAKER.

To attach the shaker to the counter, place the hard-wood washer upon the slab and put the shaker in position with the upper jaw of the clamp resting on the washer. Place the small iron washer between the clamping-screw and the counter, and screw up with the rod, placing it through the hole in the head of the clamping screw.

The shaker is made to receive a ten-ounce Albion soda-water tumbler (Tufts' No. 4 Tumbler, actual capacity 11 ½ ounces), but the wire carrying the cam can be lengthened or shortened, and by screwing the turn-buckles up or down can be adjusted for a longer or shorter tumbler.

The rubber washer sent for the purpose should be placed under the tumbler.

An oiler is sent with each shaker, with which the working parts should be occasionally oiled.

The side of the iron shaker is babbitted, but the silver-plated shaker has, instead, an adjustable gib, with which the wear can be taken up. This gib should be so adjusted, by means of its set-screws, that the slide can work freely and yet be tight enough not to rattle.

All Lightning Shakers are now made with a screw-threaded nipple on the lower part of frame, into which a counter-brace can be screwed. A detached nipple can be supplied for those shakers made before this brace was introduced.

To attach the brace, screw the foot far enough up on the rod to make the brace short enough to go easily between the floor and shaker, screw the upper end of brace into the nipple, at lower part of shaker frame, as far as it will go, and screw down the foot to a firm bearing on the floor, taking care not to lift the slab from the counter in so doing. Screw the foot to the floor after adjusting.

The Shaker with Standard requires only to be screwed to the floor with four lag screws, which are sent with it.

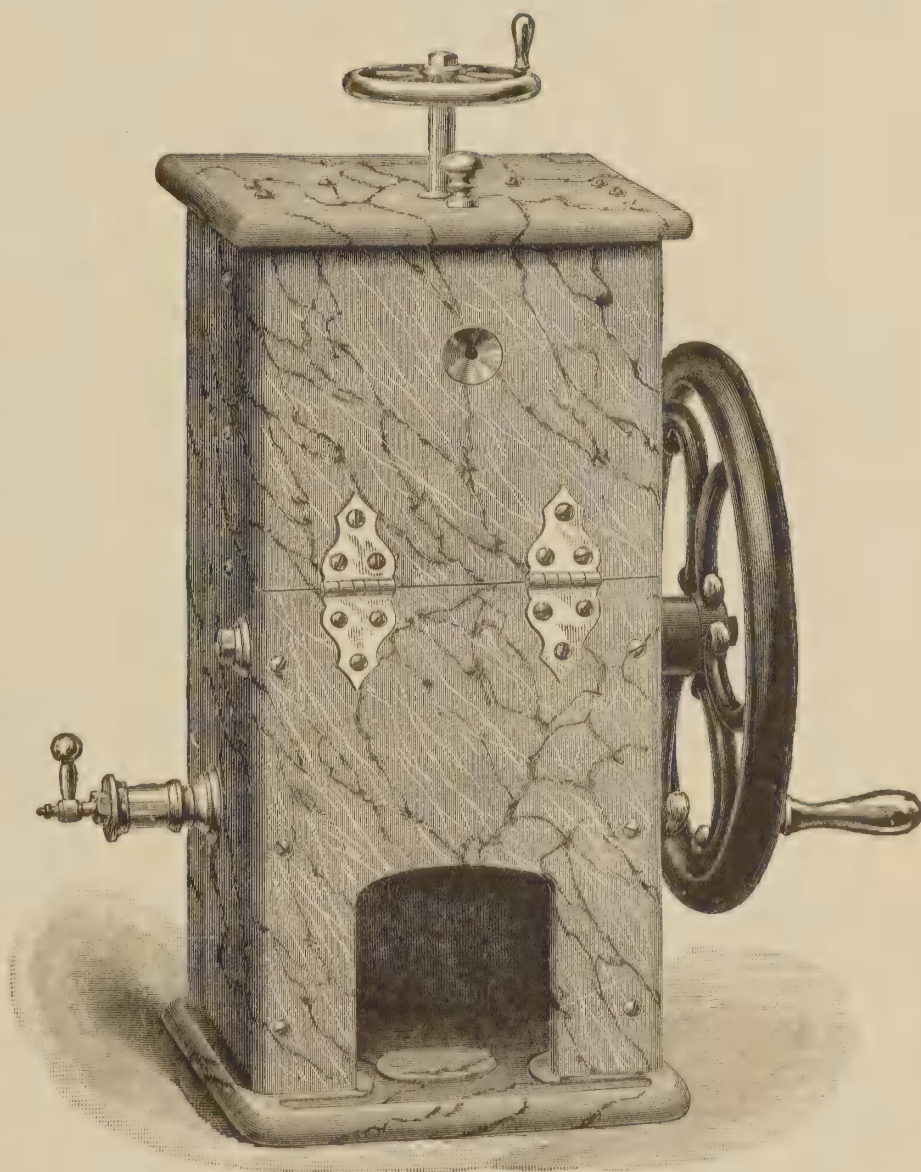
DIRECTIONS FOR 1885 ICE-SHAVER.

AFTER placing the shaver on the counter, and before using it, examine the inside, and see that everything is in position, as parts may be jarred out of place in shipping. The square tunnel can be taken out at the top and then the disk, which contains the knives. Cut the ice into oblong blocks to fit the space in the square tunnel, which prevents it from turning and makes it solid to cut.

The small wheel on top is for the purpose of keeping the ice close against the knives. Pressure should be applied very gradually while turning the large wheel and cutting the ice. If the shaver does not cut fast enough, take out the disk, and knock the knives out on the front, so as to give more cut.

To Adjust the Knives: Take off the thumb-screws which hold the cover in place, and lift off the cover, with the screw and wood follower. The disk that holds the knives can be taken out by taking hold of it on the side opposite from the shaft, and lifting, and at the same time drawing it from under the gear-wheel. After adjusting the knives replace the disk.

The knives should be ground, and the shaft oiled occasionally.



DIRECTIONS FOR IMPROVED ICE-SHAVER.

IN putting in the ice the follower must be on the opposite end from the wheel. To move the follower to this position, lift up the yoke and turn it over so that the handle will point to the opposite end from the wheel; this will relieve the follower from the screw-rods and it can be pushed to the rear. The yoke must then be reversed to throw the follower in the screw-rods again.

Put in an oblong piece of ice, to fill the box as full as convenient; close the covers, and turn the wheel.

The shaver is self-feeding, and on turning the wheel the follower presses the ice against the cylinder which carries the knives. The ice will be shaved fine like snow.

Before putting in another piece of ice, remove the few small pieces of the first piece which remain.

The shaver will shave irregular shaped pieces of ice, but blocks cut to a proper size are more satisfactory and economical.

The machinery should be oiled, and the knives ground occasionally.

Take Notice. The style of 1889 is provided with a plunger for the purpose of clearing the cylinder in case of clogging when worked rapidly.

When the shaver is provided with the plunger, the yoke is reversed; to disengage the follower from the screw-rods the yoke is turned so that its handle points toward the wheel, and vice-versa.

THE MANUFACTURE OF CARBONATED WATER.

CARBONATED WATER, commonly known as soda-water, is simply pure water artificially impregnated with carbonic-acid gas at a pressure of ten atmospheres (150 pounds to the square inch), or thereabouts.

Carbonic acid, or carbon dioxide (CO_2) exists, in a solid state, in bicarbonate of soda, marble, whiting, and other carbonates, forming nearly one-half their weight.

Carbonic-acid gas is obtained by the chemical action of sulphuric acid (oil of vitriol) on the carbonate. Sulphuric acid having a greater affinity than carbonic acid for the alkali, unites with it, forming sulphate of soda (glauber's salts), or sulphate of lime (gypsum); liberating the carbonic acid in a gaseous form.

As the conversion of water into steam produces pressure in the boiler, so the conversion of solid carbonic acid into gas in a generator produces pressure.

Advantage is taken of the pressure thus produced to assist the combination of the water and gas.

In generators of my manufacture six parts (by measure) bicarbonate of soda or marble dust (ground marble), and eight parts water are placed in the alkali-chamber, and three parts sulphuric acid in the acid-chamber. The purifiers are filled two-thirds full of water, all caps screwed firmly in place, and the generator is connected, by means of a flexible pipe, to a fountain filled two-thirds full of cold, pure water. The acid-valve is now opened and a portion of the acid allowed to flow slowly into the alkali-chamber. When a sufficient quantity has been let down, the acid-valve is closed and the agitator revolved slowly. Gas is thus evolved and pressure created, which is indicated by the pressure-gauge, and any excess relieved by the safety-valve. When sufficient pressure is obtained a cock is opened, which allows the gas to pass through the purifiers — where it is cooled and purified — and into the fountain.

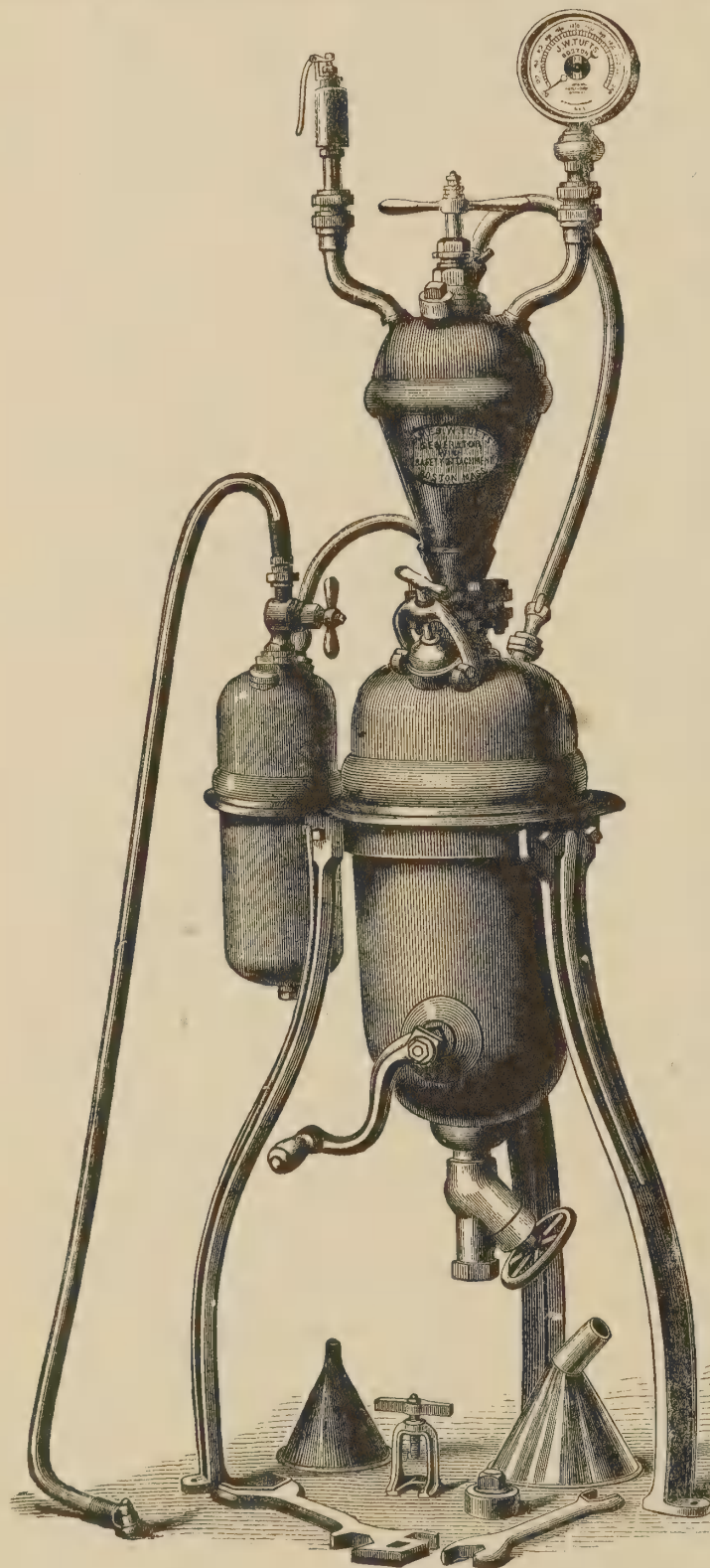
While the gas is passing into it, the fountain is vigorously rocked or shaken, to facilitate the absorption of the gas by the water. The water is properly charged, when, after thorough agitation of the fountain and with purifier-cock open, the pressure-gauge indicates from 150 to 180 pounds.

As this pressure is nearly twice the ordinary pressure on a steam boiler, only the generators and fountains of reliable makers should be used.

The soda-water thus made has a sparkling appearance and a sharp, pungent taste. The water contains many times its own volume of carbonic-acid gas, and is an agreeable and healthful drink, frequently prescribed by physicians.

TUFTS' IMPROVED STERLING GENERATOR.

To set up the generator, first attach the legs of the stand to the body by means of the nuts and screws. Each leg and the place for it is numbered.



Put in the body of the generator, and make connections as seen in the engraving.

That part of the apparatus which holds the crank is called the alkali-chamber. The chamber above is the vitriol-chamber.

The attachments above the vitriol-chamber are the safety-valve and the pressure-gauge. The small cylinder attached to the stand is the purifier.

With my new generator I furnish a blow-off cock, which is to be screwed on the bottom of the alkali-chamber in place of the cap. The cap is also furnished, so as to be used in case of accident to the blow-off cock; also a clamp-cap for the alkali-chamber opening, which, on the score of convenience and safety, is a very great improvement over the screw-cap. The screw-cap, however, is also furnished to guard against loss of time in case of possible breakage.

The cylinder in which the soda-water is kept, is the fountain.

Every generator is put together in the factory, and carefully tested by hydraulic pressure, at higher pressure than that required in making soda-water.

Capacities.

No. 1,	Alkali-Chamber,	16	gallons ;	Acid-Chamber,	3	gallons ;	Purifier,	2 ½	gallons
" 1½,	" "	11	" "	" "	2	" "	" 2	" "	
" 2,	" "	5 ½	" "	" "	1 ¼	" "	" 1 ¼	" "	
" 3,	" "	3	" "	" "	¾	" "	" 1	" "	

Proportion of Materials for the Different Sizes.

Size No. 1, to Charge 75 Gallons at Pressure of 150 Pounds.

Marble Dust	69	pounds
Vitriol	3	gallons
Bicarbonate Soda	6	pounds
Water in Alkali-Chamber	6	gallons
Water in Purifier	1 $\frac{3}{4}$	"

Size No. 1 $\frac{1}{2}$, to Charge 50 Gallons at Pressure of 150 Pounds.

Marble Dust	46	pounds
Vitriol	2	gallons
Bicarbonate Soda	4	pounds
Water in Alkali-Chamber	4	gallons
Water in Purifier	1 $\frac{1}{2}$	"

Size No. 2, to Charge 28 Gallons at Pressure of 150 Pounds.

Marble Dust	30	pounds
Vitriol	4 $\frac{1}{2}$	quarts
Bicarbonate Soda	2 $\frac{1}{2}$	pounds
Water in Alkali-Chamber	1 $\frac{1}{2}$	gallons
Water in Purifier	3	quarts

Size No. 3, to Charge 16 Gallons at Pressure of 150 Pounds.

Marble Dust	17 $\frac{1}{4}$	pounds
Vitriol	3	quarts
Bicarbonate Soda	1 $\frac{1}{2}$	pounds
Water in Alkali-Chamber	3	quarts
Water in Purifier	2 $\frac{1}{2}$	"

When practicable, I would advise the use of bicarbonate of soda with no marble dust, when the following proportions should be used:—

Size No. 1, to Charge 140 Gallons at Pressure of 150 Pounds.

Bicarbonate Soda	69	pounds
Vitriol	3	gallons
Water in Alkali-Chamber	6	"
Water in Purifier	1 $\frac{3}{4}$	"

Size No. 1 $\frac{1}{2}$, to Charge 90 Gallons at Pressure of 150 Pounds.

Bicarbonate Soda	46	pounds
Vitriol	2	gallons
Water in Alkali-Chamber	4	"
Water in Purifier	1 $\frac{1}{2}$	"

JAMES W. TUFTS' BOOK OF DIRECTIONS.

Size No. 2, to Charge 50 Gallons at Pressure of 150 Pounds.

Bicarbonate Soda	30 pounds
Vitriol	4½ quarts
Water in Alkali-Chamber	1½ gallons
Water in Purifier	3 quarts

Size No. 3, to Charge 30 Gallons at Pressure of 150 Pounds.

Bicarbonate Soda	17 pounds
Vitriol	3 quarts
Water in Alkali-Chamber	3 "
Water in Purifier	2½ "

The following Table may be of Service :

15 pounds Oil Vitriol	equal one gallon
13½ " Marble Dust	" " "
25 " Marble Dust will neutralize 15 pounds Oil of Vitriol.	

Directions for Use.

INTO each fountain put six, ten, or fourteen gallons of pure spring water (the colder the better), according to their size. Connect one with the purifier. Take off the cap, and pour into the alkali-chamber the prescribed amount of water, and afterward the bicarbonate of soda or marble dust, turning the crank slowly while the latter is running in. Do not return the cap to its place until the vitriol has been put into the vitriol-chamber. Fill the purifier two-thirds full of water, and return the cap to its place. Close the vitriol-valve by turning the lever to the right, as a screw is driven. Do not make the mistake of supposing the vitriol-valve is closed when it is wide open. Remove the cap at the top of the vitriol-chamber, and put in the sulphuric acid. Return the caps to place.

In using marble dust, the agitator should be turned every few minutes after the dust is put into the alkali-chamber, to prevent the mass from setting and causing the agitator to stick.

Before generating the gas be sure to try the lever of the safety-valve, so as to see that it works freely and does not stick upon its seat. Do not disturb the valve after commencing operations.

The hand of the gauge should never be turned around with the finger, as the pressure-rod is liable to be affected, and its accuracy therefore destroyed.

Care is requisite to see that the cocks are open when charging the water, and that undue pressure is avoided in closing the vitriol-valve.

The gas should not be allowed to pass over into the fountain until the

gauge indicates a hundred and fifty, and *then not with more than half the volume the cock will allow*, otherwise the contents of the generator will sometimes overflow into the purifier.

The generator should never be charged over a hundred and eighty pounds. Few persons realize how great that pressure is, it being in reality nearly twice the pressure allowed to a steam-engine boiler. My generators, however, are made so strong that such pressure is safe, while a higher pressure is never advisable or necessary. Some dealers advise a pressure of but a hundred and fifty pounds.

After turning the agitator, let down a small quantity of the vitriol from time to time, turning the agitator between. A bubbling will be heard of the gas making its escape from the material. The hand of the gauge will be seen to move, and it should be watched carefully to know the progress of the operation. The vitriol should be let down in small quantities, as many as eight or ten times for the whole.

When the hand of the gauge reaches one hundred and seventy, eighty, or ninety, as the operator may desire, the cock on top of purifier and the fountain-cock should be opened to allow the gas to pass over (the vitriol-valve of course being closed), and the fountain rocked, or otherwise shaken vigorously, so that as much gas as possible may be absorbed by the water. The hand of the gauge will then recede, and until it stops (probably at forty or fifty pounds) the fountain should be agitated. The cocks should then be closed, and the pressure worked up as at first, until the desired amount, as indicated by the gauge, is reached; then open again that more gas may pass over, when the agitation of the fountain should be resumed, until the pressure equalizes, which it will probably do at eighty or one hundred pounds this time. Proceed as before and when the pressure equalizes at one hundred and sixty, or one hundred and seventy pounds, as may be desired, the fountain is charged at that pressure. If the fountain is thoroughly rocked or agitated, one hundred and fifty pounds is ample for the finest quality of soda-water, and the work is economically done. The first fountain should then be disengaged, and the second attached, and charged by the same process. A frame on which the fountain can rest will be found desirable for the shaking. If the operator has fountains remaining uncharged when the charge in the generator is so far exhausted that a hundred and fifty pounds pressure cannot be raised, the remaining gas may be saved by partially charging them with it. Should the pressure become greater than the required working-point it will be indicated by the gauge and relieved by safety-valve; but it is at all times advisable to keep the pressure within one hundred and eighty pounds.

Before the pressure is entirely exhausted, the contents of the alkali-chamber should be blown out by opening the blow-off cock, but not with over ten or fifteen pounds pressure.

The purifier will be found empty after the generator is blown off, for the reason that the pressure remaining in the purifier forces the water through the pipe into the alkali-chamber.

There is always a liability of the contents of the alkali-chamber foaming over into the pipes and purifier, unless special care is taken to allow the gas to pass through the purifier-cock SLOWLY; that is, with the cock only open a little, enough to avoid too rapid reduction of the pressure, which is the cause of the difficulty. The overflow is most liable to occur when surplus gas is being blown off.

The pipe between the generator and purifier will be known to be clear by closing the cock, removing the cap, and blowing through the opening that the cap covers.

Immediately after the operation the gas should be let off from the charging pipe, THE VITRIOL-POT SHOULD BE FILLED WITH WATER, AND THE ALKALI-CHAMBER THOROUGHLY WASHED OUT. *If the residue is allowed to remain in the generator after the operation, it will become hard, and the lead lining is likely to be seriously injured in its removal.* The sulphuric acid should not be poured in until immediately before charging, and should not stand in the pot longer than necessary. When the sulphuric acid acts upon the bicarbonate of soda, or marble dust, it will be noticed that there is considerable heat in the generator, which is owing to the dilution of the acid with the water. None of it passes over with the gas, which is cooled by its own expansion in the act of leaving the marble.

After long use the bearings of the vitriol-stem should be oiled. Do not screw down the vitriol-valve too hard, as there is danger of injuring the socket. When turned down to a bearing, even without pressure, it will close the valve.

The greased tow under the stuffing-nuts, where agitator and vitriol-stems pass through, will occasionally need renewing.

To insure durability, it is advisable, in conducting a charge, to consume as little time as possible beyond that necessary to generate the gas.

At the end of the season the outside of the generator should be oiled.

Freezing

Do not leave water in the generator during cold weather. If it freezes it will surely burst the generator.

How to Improve the Effervescence of Soda-Water.

To each fountain, or ten gallons of water, add one and a half ounces of bicarbonate of soda. Put it in when you put the water into the fountain. This will give the water a fine sparkling appearance, and after it is charged it adds an effervescence which is not otherwise obtained.

Foaming in Carbonic Acid Generators.

THE following is from "The Druggists' Circular," and is published for the benefit of those who are troubled by the contents of generator running over into the purifier. The cause in all cases is either improper materials or improper charging, as explained in the communication below.

In reply to a request for practical information on this subject, published in the June number of "The Druggists' Circular," we have received the following communications: —

TO THE DRUGGISTS' CIRCULAR: —

I am convinced that the foaming in gas generators is caused by letting the acid down too quickly, in too large quantities at a time. I had some trouble that way at first; but having come to that conclusion, everything works smoothly now. I always let the acid down slowly, — very little at a time.

W. G. STEVENS, Yonkers, N. Y.

J. L. B. GEDDES, New York, writes: —

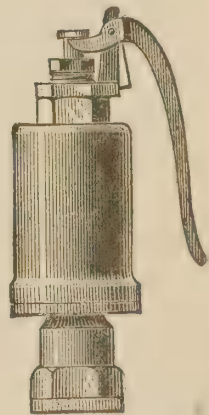
"For several years past I have used bicarbonate of soda in preference to marble or other carbonates. (1) Because if a pure bicarbonate is employed, and the gas is not allowed to pass over to the fountain too fast (that is, if the pressure on the gauge decreases no faster than it was increased), there is no foaming. (2) Because bicarbonate of soda being a pure carbonate, not contaminated with the iron sulphides, or other impurities commonly found in marble and whiting, a purer quality of gas is obtained. I have used both iron and copper generators; but I prefer those made of copper."

Directions for Safety-Valve.

IF the valve blows off it will sometimes cause it to leak off the gas below the required point of safety. To obviate this and stop the escape, it is simply necessary to cause the valve to snap down upon the seat. This is done by pressing firmly on top of the valve, and at the same time brushing the finger sharply down the projecting lever, causing the lever handle to fly back instantly. As 180 pounds pressure is sufficient for the best soda-water, the valve when sent to the customer is set at 210 pounds, and the operator will observe that it is set about right, when the part of the screw that is filed off is even with the top of the lock-nut.

It can, however, be regulated to blow off at a greater or less pressure. To do this, first loosen the lock-nut to which the lever handle is attached, and then with a wrench turn the nut underneath the lock-nut *down* for higher pressure, and *up* for a lower pressure. Be sure to secure with the lock-nut after adjusting.

It should be remembered, however, that a very slight alteration of this screw



effects a great increase or decrease of pressure, and also that the valve should always be set to operate inside of 225 pounds.

Escape of Gas from Soda Fountains.

I FREQUENTLY have complaints that the pressure is lost from a fountain before its contents are drawn off. This is always caused either by the use of a poor washer between the cock and the top of the fountain, or by a failure to use the spanner-wrench with sufficient force to make a tight joint. The gas may all escape without being manifested by appearance, in sight or sound. It cannot escape from the cock, for it would then drive the water before it and the leak would be apparent. Thick, soft, oil-tanned leather, such as harness-makers use, should be used, and not the ordinary sole leather.

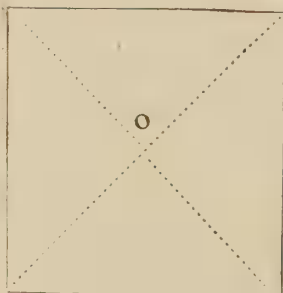
Repairs.

ALL the working parts of my soda-water apparatus, together with generators and fountains, are constructed with a view of withstanding the wear and shock of a great and sometimes sudden pressure, and so have a thoroughness in every detail not appreciated by mechanics in other lines. Repairs should therefore be entrusted only to those accustomed to this work. My charges for repairs will be as reasonable as possible, and estimates will be made before the work is commenced, if desired. I would advise customers requiring repairs to have such work done in the fall, as during the selling season my shops are so over-crowded as to make delay very probable.

Generators and fountains for re-lining or repairs should be sent in before January 1st, as between that date and July 1st it is impossible to give such work prompt attention.

Detachable Carboy Trunnions.

Directions for Setting up Tufts' Detachable Carboy Trunnions.



To set up the frame, place the ends of pipe in sockets on sides of castings, pass the rod through the small holes and screw up nut until tight.

Find the middle point on opposite sides of carboy, by drawing lines as shown in cut.

Start a SMALL gimlet hole one inch above the middle point, and screw in trunnions the full length of screw. The carboy is then lifted into the frame, the trunnions falling into their supports, suspending the carboy a few inches from the floor, where it can remain until emptied.

Do not bore large hole for trunnion screw, as it is gimlet-pointed and will bore for itself as soon as started.

THE MANUFACTURE AND BOTTLING OF CARBONATED BEVERAGES.

The Manufacture of Goods.

THE difference in cost between fine and inferior goods is too small to be figured. Therefore use the best of materials, and take pains to have your goods as nice as you can make them.

It only requires patience and perseverance to enable the beginner to compete with the world.

Beware of the man who will teach you your business for fifty dollars. He is usually a fraud, whose stock in trade is copied from the publications of manufacturers of apparatus. Reputable houses employ reputable men.

Every manufacturer of apparatus will supply all necessary instructions for the proper management of his apparatus; and every manufacturer of extracts will tell how the best results can be obtained from the use of his goods.

It is cheaper to buy good extracts than to attempt to manufacture them; for extract manufacturers, buying largely and manufacturing on a large scale, can sell at a profit at a less price than the same article can be manufactured for on a small scale.

The bottler should constantly study his business. There is such a thing as scientific bottling, and the highest ideal will never be attained. The bottler of four or five months' experience generally knows it all, while those of fifteen or twenty years' experience will always admit that they have much to learn.

Originality.

IN starting in the business, it is never good policy to try to undersell the old established concerns. A beginner will find it far more profitable to make specialties, and to endeavor, in the staple goods, to offer a better quality than ordinary.

A fact that should not be overlooked is this: ORIGINALITY PAYS. Do not be misled into the belief that because some one has established a reputation for his goods, that your road to success lies in imitating them.

Do not even imitate imported ginger-ale.

American made ginger-ales are superior to the imported. The reputation of the ginger-ales made by the Poland Spring Co. and others is well known.

Use original style labels, and American made bottles.

The label of S. S. Pierce's Champagne Cider (Boston) is commended as a model of a tasteful and original label. It is a red lion on a square, white label, without border, and with no lettering except the name of the article and the maker.

Advertising.

BOTTLERS rarely pay sufficient attention to the appearance of their sales-room; and a display in a show-window is almost unheard of in the business.

This should not be so. The bottler needs an attractive salesroom and a handsomely arranged show-window fully as much as a merchant in any other line of business. A very attractive display can be made with bottled goods, as any one who has attended the exhibitions at the bottlers' convention knows.

The bottling apparatus should be placed in the front of the shop, and as near as practicable to a door or window, so that it may be readily seen from the street, and thus attract attention and act as an advertisement.

The operation of machinery is always interesting to the public, and it is a well-known fact that motion is the best possible advertisement.

Too much attention cannot be paid to cleanliness and neatness. The purity and wholesomeness of your beverages will be estimated by the appearance of your shop.

Nothing advertises a bottling business more than neat wagons, horses, and men; the public largely judge the goods by the appearance of these.

The notable success of more than one bottler is attributed largely to the fine appearance of his wagons, harnesses, horses, and men.

A very successful bottler in one of the New England cities, formerly kept a very disorderly and unsightly shop. One day it dawned upon him that it would pay to make his establishment neat and attractive. He acted upon the idea, and has to-day one of the best arranged shops in the country, together with a salesroom in which his goods are attractively arranged and displayed, and a comfortable office in which his business is transacted. He dates his success from the time when this change was made.

It will pay to have this orderly, business-like, and attractive arrangement from the start, as it can be obtained then without much cost; the expense of maintaining it is trifling, and the prestige thereby obtained is of great value.

Do not spend money at bars to advertise your business. This is the greatest mistake a bottler can make; it is very expensive advertising, and besides is unprofitable.

There is no reason why bottled beverages should not be sold on their merits, as other merchandise is sold, and treating should be left to the brewers

and distillers who originated the practice, and whose margin of profit is large enough to stand the outlay.

A good team or an attractive shop will do more effective advertising than twice the money spent at bars, and, it being evidence of prosperity, will greatly improve the bottler's credit.

Put your name prominently and permanently on every article used in your business.

Advice in regard to Help.

It should always be borne in mind that the business will be either advanced or set back by the help, and that too much care cannot be exercised in procuring the right kind.

A drunkard not regarding his own interests will neglect those of his employer and of his employer's customers. Such men over-drive and neglect horses, and wear out harnesses and wagons.

The assistance of a practical bottler is not to be despised, and every beginner, whose business will warrant it, is advised to secure the services of one, as his skill and experience will save time, and be of advantage in many other ways.

If you employ a bottler, give him full charge of his work and hold him responsible for its proper performance. Hire a good man, and having obtained one do not be afraid to trust him. It is a mistake to try and keep the bottler in ignorance of your method of mixing and preparing syrups, etc. The result of such a course is, that he will experiment at your expense when your back is turned, and will eventually learn that in regard to which you wish to keep him in ignorance, and at a great cost to you.

Do not allow loafers and hangers-on to manage your business. Keep your shop cleared of them.

Leaks in the Business.

LEAKS in the business should be carefully looked for and promptly remedied, and close attention should be paid to little things.

The bottling apparatus, when received from the manufacturer, is a handsome piece of machinery. It represents the investment of a large sum of money, and should therefore receive the greatest possible amount of care and attention. With good care it should last ten years or more, but if neglected and abused it can be destroyed in six months.

The bottle question, which is such a bone of contention among bottlers, can be readily disposed of by a simple and business-like measure. Adopt a trademark and have it blown into the bottle. This will make the bottle useless

to other bottlers, who will not take it in place of their own. The cost of registering a trademark in the U. S. Patent office, including patent-solicitors' fees, is about \$40.

See that your acid is of the proper strength, — it should register 66° on the acidimeter, — get pure white marble dust of the coarser grade. You can get more gas from a given amount of marble dust with good acid than with poor acid, and some marble dust contains more carbonic-acid gas than others.

The teamster will sometimes accidentally drop a case and break a piece out of it. If repaired at once it is as good as ever, but if neglected it is so much capital gone.

Many bottlers accumulate dirty bottles containing flies, grease, and other dirt. Such an accumulation is a filthy sight, and always impresses visitors unfavorably. These bottles should never be broken up, but should be cleaned by the boy in leisure moments. A half-barrel containing a solution of caustic potash in water should be provided in which dirty bottles can be soaked.

Neck-wires on broken bottles should be removed, as they are worth saving. Four or five barrels of broken glass often contain four or five dollars' worth of neck-wires.

The Water.

SUCCESS in the bottling business depends in a great degree upon the water. The water used should be PURE. By this I mean that it should be free from organic matter. The sale of certain popular brands of so-called mineral waters has attained enormous proportions. Many of these waters are simply pure spring water highly charged with carbonic-acid gas. Spring water is the best for carbonator's use. Water drawn from deep wells frequently contains considerable carbonic-acid gas, and is especially desirable on this account. The first care of the bottler of carbonated drinks should be to secure a bountiful supply of pure water. He is indeed fortunate who possesses a spring or well in the water of which chemical test can find no decaying vegetable or animal matter. All are not so fortunate, especially the city bottler, who must often depend on aqueduct water, usually unfit for use without filtration. A simple and practical test for organic impurity is by adding a small quantity of Permanganate of Potash, about one-fourth of a grain to the gallon of water to be tested, and allowing it to stand for a time. The permanganate will impart a faint purple tinge to the water, which will gradually disappear if organic matter be present. The more impure the water the sooner the purple color will disappear, and if very impure a dirty straw color will take its place. *The water should always be tested.* Its outward appearance, clearness, brightness, and tastelessness, is not

proof of its purity. If the water be impure, and better cannot be obtained, it must be filtered before using. A good filter can be made in the following manner: —

This filter was arranged from a fifty-gallon wine-cask, with a false bottom perforated; on this a layer of gravel, then alternate layers of charcoal and white, clean sand, and top layer of excelsior, with perforated cover ten inches from the top. A crossbar of wood, four inches square, was held across the head of the barrel, through the centre of which a common wooden threaded screw held the filter in a solid mass. A discharge-cock in the bottom of the barrel, when opened, carried off the sediment, and the closing of the feed-pipe allowed the filter to clear itself.

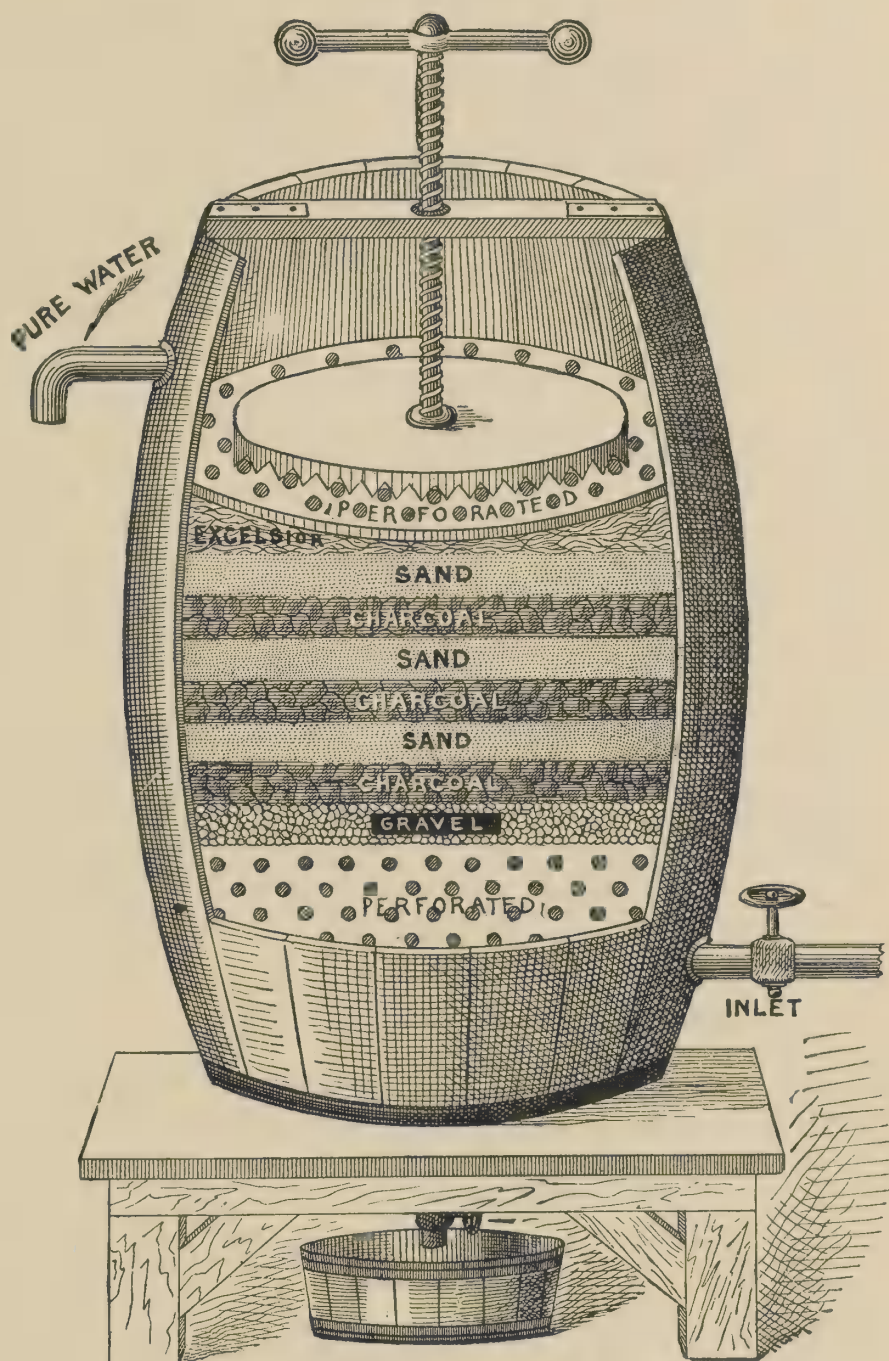
The cost, if I recollect, was about \$3.00, and I think if the supply-pipe had been in

form of a coil in hot water, the water would have been nearly perfect; the result, as it was, was a perfectly clear liquid, a one-pound bottle of which has been hanging by a string in a sunny window for over six weeks and no sign of sediment or precipitation.

I am indebted to the "Bottlers' Gazette" of September, 1883, for the drawing, and description.

We recommend that coarse gravel be substituted for the excelsior shown in illustration, and that the perforated covers be charred like the inside of cask.

The charcoal should be removed from the filter and changed several times





during the season. Charcoal once used in a filter should never be replaced. It becomes so thoroughly saturated with impurities as to be a source of pollution, instead of a means of purification; and it can only be cleansed by fire.

Filtration under pressure is not as desirable as without pressure, but, if necessary, one of the many excellent pressure-filters in the market may be used. Pure water should be used for washing bottles, as well as for manufacturing the beverages, for it is useless to provide pure water for the beverage if there are impurities left in the bottle by the water used in washing. Many bottlers believe that hard water should not be used for bottling purposes; and yet some very successful bottlers use hard water, and claim it has no disadvantages.

If it be desired to soften hard water, the following, from David Smith's "Carbonated Waters," is a good method. Allow the water to be treated to run into a vessel of sufficient capacity until it is three parts full, then add lime-water until the water tastes slightly alkaline; when this occurs, stop "liming" and add sufficient water to cause the alkaline flavor to disappear; allow the whole to rest ten or twelve hours, and a really splendid water will be the result. The object of this treatment is to transform the bicarbonate of lime into the *very sparingly soluble* carbonate of lime.

Formula for Preparing Lime-Water.

Slacked Lime	10 ounces avoirdupois
Water (previously boiled)	5 gallons

Put the lime in a stoppered vessel containing the water, and shake well for three or four minutes. After twelve hours the excess of lime will have subsided, and the clear solution may be siphoned off.

Distilled water has of late become popular with some of the most prominent bottlers. It is not a healthful beverage unless aerated or carbonated.

The following is from the "American Carbonator and Bottler": —

Charcoal as a Filtering Material. — At a meeting of the Society of Engineers, in London, England, Edward Perrett read a paper on filtration. The author first compared the processes of straining and filtering, and pointed out that in the latter process the mutual attraction of particles of matter, in addition to the straining action, causes the retention of the suspended material in a liquid passing through the filtering medium. After describing the early experiments made by him in filtering river-water through filter bags, such as are used for the filtration of sugar, Mr. Perrett called attention to the danger of using animal charcoal for the filtration of drinking water. This material, he said, has the power of taking out matter in an infinitely fine state of division, and even in solution, the charcoal becoming so charged with such matter that nothing short of subjecting the charcoal to a red heat is sufficient to thoroughly clean it. An animal-charcoal filter with any system of washing will, he said, gradually accumulate the very fine matter, which may germinate, and at length be carried through with the filtered water.

The following is from the "Washington Post": —

To Purify Water. — Mr. R. B. Ferguson, the Capitol Hill pharmacist, held up to the sunlight a bottle of pure, clear water. "You would hardly believe it," he said, "but that is Potomac water, and if you will place a piece of ice in a glassful you will agree with me that no mountain spring in America ever gave clearer, more sparkling, or cleaner water than this, nor, I believe, more healthful. The process by which this purification is accomplished is so simple that a child of ten years need not fail, and so cheap that the poorest citizen can indulge in the luxury. Twenty-five cents a month should be the utmost limit of cost for ten gallons daily." "What is the process?" "For each gallon of water contained in a suitable vessel — although metallic, and especially zinc, should not be used — add four or five drops of solution of perchloride of iron, and stir until thoroughly mixed. After standing several hours the clear water can be poured off. If done in the evening, the next morning the water will be perfectly clear, all the sediment being at the bottom. If, in removing the water, any of the sediment should become stirred up, it can be removed by straining through a piece of clean, close flannel or white felt. One drop of the iron solution in one gallon will make the water clear, but the precipitate is very light and does not easily subside, and the water is difficult to filter. The quantity mentioned (four or five drops) throws out of solution all the organic matter, and is precipitated readily with the refuse, so that the clear water does not contain a trace of the iron; but if the whole of the iron was in solution, it, of itself, would not be unwholesome, even in the much greater amounts. If a much larger proportion of the solution perchloride is used, a portion or perhaps all of the precipitate will be redissolved, and of course, the water will be worse than at first. Alum has been suggested to purify water, but it is open to the objection stated in the use of one drop of the iron solution; that is, it does not clear, except by standing a long time, without filtering, and that is difficult."

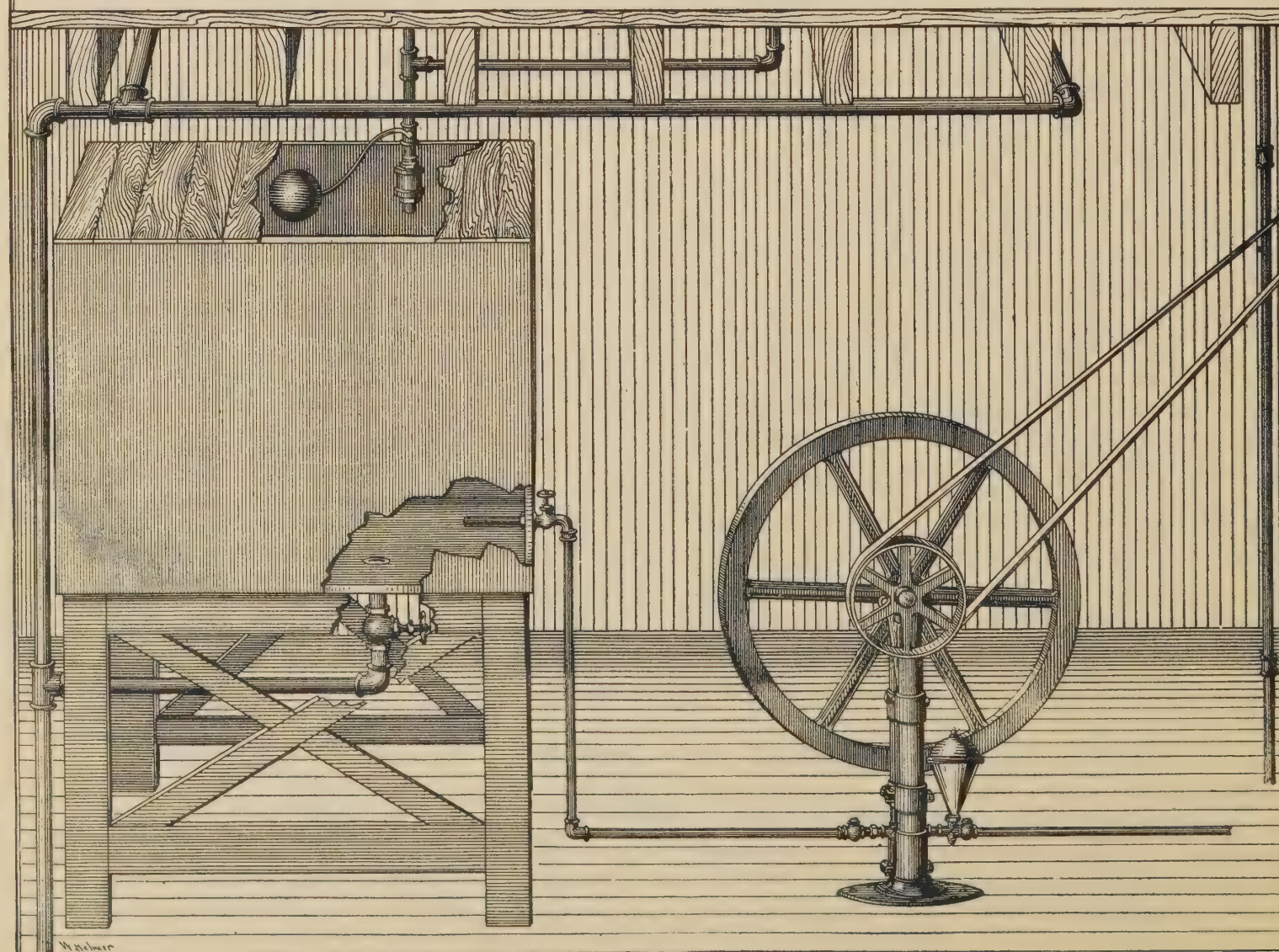
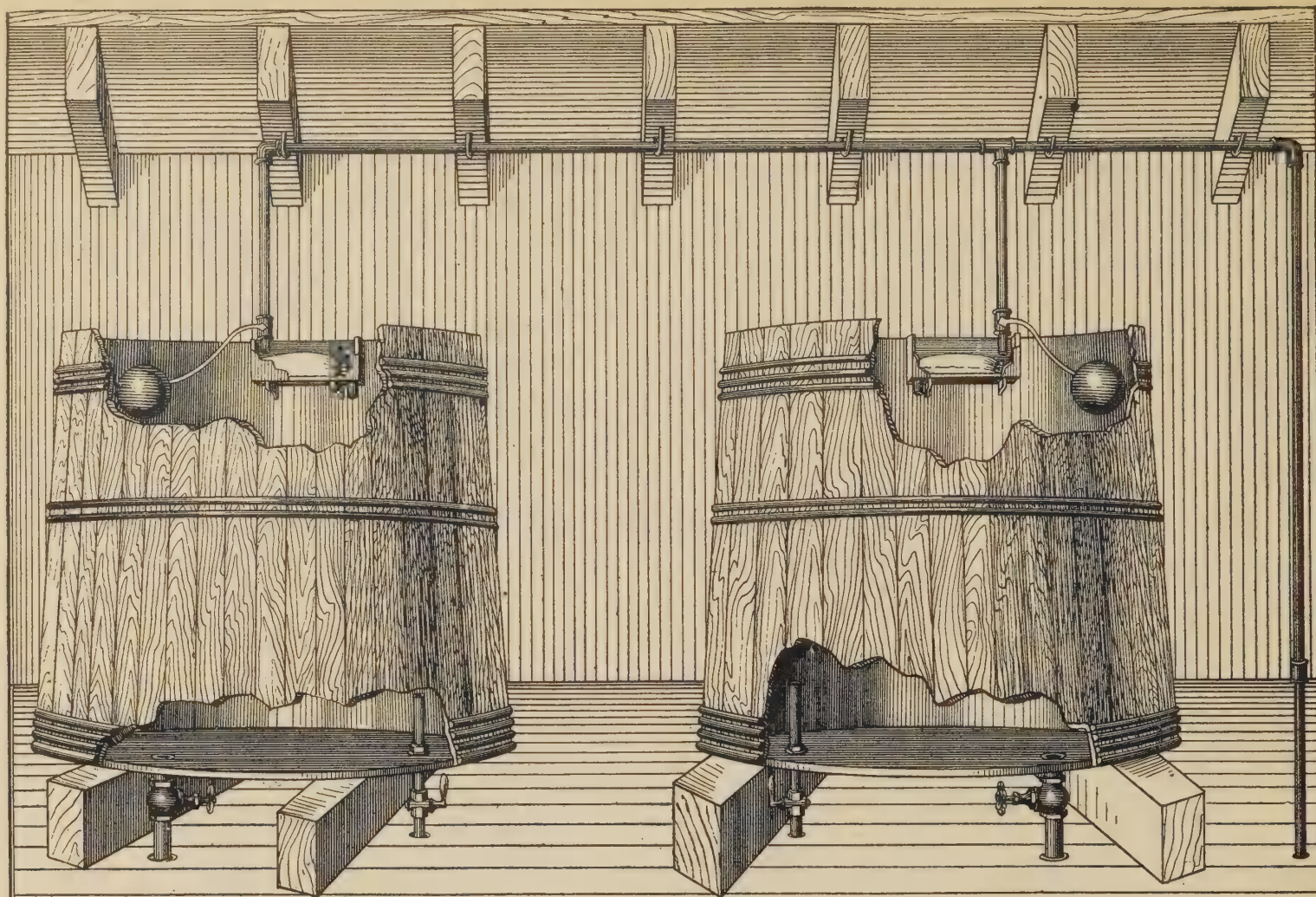
The Alum Process of Purifying Water.

THERE is no process of water purification known to bottlers that is so simple and gives such satisfactory results as treatment with alum.

The illustration on page 102 represents a simple and complete apparatus for treating an impure water with alum. It is modeled from many now in actual use, can be built by any carpenter and plumber, and of a suitable size for any bottling establishment.

The vats shown upon the upper floor should each be large enough to hold at least one day's supply of water for all the needs of the shop; for it is as essential that pure water should be used for washing and rinsing bottles, cylinders, and utensils, as well as for making syrups and soda-water, if roily beverages are to be avoided.

The water supply-pipe, shown ascending in the right hand side of the illustration, is supposed to be supplied with water under aqueduct pressure; but if water under pressure is not available, additional connections, not shown in the



cut, should be made, to and from the pump, to allow it to be used to draw water from the source of supply and force it up into the vats.

The small boxes in the upper part of each vat should have perforated bottoms, and in each box should be placed a bag filled with alum crystals. When the water is turned on it plays upon these bags and the alum is slowly dissolved. Three grains to each gallon of water which each vat will hold, is the proper proportion of alum, but as all of the alum will not be dissolved, double this amount is recommended for use.

When the vats are filled, the water will lift the floating balls and close the cocks, thus shutting off the water. When both vats are full, a cock in the supply-pipe, not shown in the illustration, should be closed to prevent water from flowing in, when, through water being drawn off, the float falls and the ball-cock opens.

If the water is forced up by the pump, a relief-valve should be placed at some convenient point in the supply-pipe and provided with a waste-pipe leading back to the source of supply. This valve will be opened by the pressure when the floating ball-cocks close, and will allow the surplus water to flow back to its source, thus preventing the pipe from being burst, or the pump from being strained or broken by excess of pressure.

The water should be allowed to stand in the vats twenty-four hours before using; during which time the alum will act upon the impurities in the water, precipitating some to the bottom, driving others as scum to the top, and coagulating the remainder so that the sponge-filter will readily remove them.

When the water is to be used the cock in the outlet-pipe below one of the vats should be opened, allowing the water to pass to the tank on the floor below. When this tank is full the ball-cock will close, shutting off the water.

Into the end of the pipe which lets the water into the tank is screwed a sponge-filter, which should be opened, the sponge removed and thoroughly cleaned every day.

From the tank the purified water is conducted by a pipe to the pump, by which it can be forced against pressure into the bottling cylinders. Branches can be arranged from the pump outlet-pipe to supply bottle washers and rinsers, the sink where bottles are soaked, and wherever else it may be needed. Relief-valves can be arranged on these branches to prevent excessive pressure on washers, rinsers, etc., and the pipes from them lead back into the tank, thus preventing waste.

As the water is drawn off from the tank the ball-cock will open, thus maintaining a constant supply. When the contents of the first vat are exhausted, the cock in the outlet-pipe should be closed, and the cock in the outlet-pipe of the second vat opened to continue the supply in the tank. The outlet-pipes in both vats and tank are so arranged that the last few gallons containing the precipitated impurities are not allowed to be drawn off for use.

While the contents of the second vat are being used, the first vat should be thoroughly cleaned out and prepared for use. Open the cock in the large waste-pipe below the vat and allow the impure water to run off. The vat should now be scrubbed perfectly clean and thoroughly rinsed, and if slimy it should be limed.

Place a fresh bag of alum in the perforated box, close the cock in the waste-pipe, and open the cock in the inlet-pipe, previously spoken of but not shown in illustration, and allow the water to again flow into the vat.

The operation above described may be repeated indefinitely. The tank as well as the vats is supplied with a waste-pipe, and should be thoroughly rinsed once a day, and scrubbed and limed as often as may be necessary to keep it sweet and clean. To lime the vats and tank use air-slacked lime in paste form, applied with a common scrubbing-brush, and wash off and rinse in a half hour.

The pump shown is the Titan, a powerful double-action pump, requiring power to run it. A small steam, gas, or kerosene engine, or an electric or water motor of two-horse power is sufficient to run it.

(C. J. CLAPP AND P. J. MAGUIRE.)

Tests for Impurities.

THE following simple tests for various impurities in the water are from the "Industrial Record": —

"To know whether water is hard or soft, dissolve a little white soap in alcohol, and add a few drops of the water under investigation. If the alcohol turns milky, the water is hard; if either unaltered or simply cloudy, it is soft.

"To detect a copper percentage, add a little filing dust of soft iron to the water, leave them in for a few minutes, and add a few drops of sal-ammoniac. A blue colorization betrays the presence of copper."

For detecting carbonic acid, a small quantity of water is mixed with a like quantity of lime-water. If carbonic acid is present, the fluid turns milky at once. Hydrochloric acid causes the turbidity to disappear.

Sulphur combinations are detected by adding a little water to mercury in a bottle; this is closed, and left to stand for a few hours. If the mercury assumes a darker surface, and upon shaking separates into gray powder, it is a sign that the water contains sulphur combinations.

Dissolved pure lime is proved by adding one or two crystals of oxalic acid to the water. A milky precipitate betrays the presence of lime.

Sulphate of lime (gypsum) is recognized by the white precipitate caused by chloride of barium in the solution. The precipitate is not redissolved by nitric acid.

Alkalies and alkaline earths are detected as follows: Litmus paper is colored feebly red by acid, and dipped into the water. If the former blue color is restored, the water is alkaline.

An iron percentage is recognized by a few drops of nutgall decoction, which are added to the water. If iron is present, the water assumes an inky gray to black color. Also one drop of solution of ferro-cyanide of potassium colors ferruginous water blue.

To detect magnesia, the water is to be heated to boiling, and the point of a knife full of carbonate of ammonia and a little phosphate of soda are added. If magnesia is present it is precipitated.

Acids are ascertained by dipping a small piece of litmus paper in the water. A red colorization betrays their presence.

THE MANUFACTURE OF SYRUPS, FOR BOTTLING.

THE most important point to be observed in the manufacture of syrups is *scrupulous cleanliness*. This point cannot be too strongly insisted on, as upon it depends the ultimate success of many manipulations.

Even the smallest bottling establishment should have a place set apart as a laboratory. Both the quality and cost of the various beverages depend upon the care and accuracy with which the various ingredients are compounded.

In order to have a uniform and even quality of goods, it is necessary to have proper measures, filters, tubs, etc.

If a spoon is used for a graduate, an old sieve for a filter, and the household wash-tubs and boiler instead of tanks and kettles specially provided, the goods cannot fail to be of poor quality.

The laboratory must be equipped with proper utensils, because without them the work cannot be properly done. The cost of the necessary articles is not great, and with care they will last for years.

When obtained, these implements should be properly cared for. They are very attractive, and with a little pains the laboratory can be made very pleasing in appearance.

They should be arranged in a systematic manner, a place being provided for everything; and everything, when not in use, should be carefully cleaned and returned to its proper place. The laboratory should be supplied with a jacket-kettle or similar contrivance for making simple syrup. It is not safe to use dry heat in preparing syrup, as it is easily burned.

The percolator is also needed for the preparation of alcoholic extracts. This is simply a cylinder with a funnel-shaped bottom, provided with perforated false bottom. The operation of percolation, though apparently simple, needs considerable experience to obtain the best results.

The hydrometer, a closed glass tube, graduated and weighted at the end, for determining the density of liquids, is a necessary instrument in the labora-

tory. The various hydrometers used by the bottler, are the alcholometer, for liquid lighter than water, and the saccharometer and acidimeter for liquids heavier than water. I am prepared to supply the trade with an hydrometer which combines the saccharometer and acidimeter. The hydrometer glass, a deep and narrow vessel to contain the liquid to be tested, should be obtained.

A graduate glass for fluid measures should also be supplied. These articles enable the bottler to dispense with the use of scales for weighing, which require so much care to keep clean, besides saving time and labor in handling.

Filtering paper, large-mouthed bottles for salts and extracts, and earthen jars for holding syrups, are also necessary adjuncts of the laboratory.

These various appliances should be kept scrupulously clean; otherwise undesirable chemical compounds are liable to be formed in the different manipulations.

The basis of all syrups is plain or simple syrup, which is simply sugar dissolved in water. Thirty degrees on the saccharometer is the grade generally used; this represents ten pounds granulated sugar to one gallon of water.

Granulated sugar only should be used in the manufacture of syrup. Experience proves it to be the most economical in the end. Filtered water should always be used. The vessel in which the syrup is prepared should be perfectly clean. The syrup should not be boiled. Gradually heat until the sugar is dissolved, never allowing it to reach the boiling point. Before cooling it should be strained through flannel, felt, or silk.

Syrup may also be prepared by cold process. This is simply dissolving the sugar in the water, by stirring, until the saccharometer indicates the desired density, which should never exceed thirty-two degrees. Cold process syrup is not considered as desirable as that made by heat.

A wooden spoon or stick should be used in stirring syrup which contains acid.

Glucose is an undesirable article to use in syrup. Its use is almost invariably a cause of ropiness in the bottled goods. It is offered to the trade by some dealers under the name of syrup body.

In using soap-bark extract to produce foam, be careful not to use enough to taste. Both the odor and taste of soap-bark are offensive, and an excess is said to make the bottled beverage ropy.

Never add acid to syrup until ready to use, as an acidulated syrup will deteriorate rapidly.

No inflexible rule can be given for the use of color. Always color to suit, and use care not to get too high a color. Acid and color should not be added to syrup one immediately after the other. Add the flavoring or foaming extract between the two. Use good extracts. There is nothing in which more deception can be practised. Always purchase extracts *from thoroughly reliable houses*. I am prepared to supply a full line of extracts and other supplies at the lowest prices for which reliable goods can be furnished.

Table of Density of Syrup.

THE following table, from the "American Carbonator and Bottler," shows the amount of syrup obtained by adding any number of pounds of sugar to one gallon of water. This table is accurate only for syrup made by cold process, as where heat is used a certain amount of water is lost by evaporation. It is based upon the established fact that one pound of sugar displaces ten American fluid ounces of water: —

Simple Syrups.

Pounds of Sugar added to one gallon of cold water.	Quantity of Syrup actually obtained.			Percentage of Sugar contained in the Syrup.	Specific Gravity.	Degrees Baume.
	Gallon.	Pints.	Fluid Ounces.		At the Temperature of 60 Deg. Fahr.	
1	1	..	10	10 $\frac{3}{4}$	1.043	6
2	1	1	4	19 $\frac{1}{4}$	1.080	11
3	1	1	14	26 $\frac{1}{2}$	1.113	15 $\frac{1}{2}$
4	1	2	8	32 $\frac{3}{4}$	1.142	18
5	1	3	2	37 $\frac{1}{2}$	1.166	20 $\frac{1}{2}$
6	1	3	12	41 $\frac{3}{4}$	1.188	23
7	1	4	6	45 $\frac{3}{4}$	1.209	25
8	1	5	..	49	1.227	26 $\frac{3}{4}$
9	1	5	10	52	1.244	28 $\frac{1}{4}$
10	1	6	4	54 $\frac{1}{2}$	1.258	29 $\frac{1}{2}$
11	1	6	14	57	1.271	30 $\frac{3}{4}$
12	1	7	8	59	1.284	32
13	1	8	2	61	1.296	33
14	1	8	12	62 $\frac{3}{4}$	1.306	33 $\frac{3}{4}$
15	1	9	6	64 $\frac{1}{4}$	1.315	34 $\frac{1}{4}$

William Gee's Table of Drops.

The following table, from the "Bottlers Gazette," will be found of use in flavoring syrups: —

1 drop of extract to an ounce of syrup is equal to	2 drams	and 5 drops to a gallon
2 drops	"	"
3 drops	"	"
4 drops	"	"
5 drops	"	"
6 drops	"	"
7 drops	"	"
8 drops	"	"
9 drops	"	"
10 drops	"	"
12 drops	"	"
14 drops	"	"
16 drops	"	"
18 drops	"	"

There are 450 drops to an ounce.



LIST OF NECESSARY LABORATORY SUPPLIES.

- 1 farmer's kettle, 20 gallons capacity, porcelain lined.
- 1 tinned-copper syrup-tank, 25 gallons capacity.
- 1 table or bench.
- 1 clean liquor barrel in which to dissolve syrup.
- 6 new ten-gallon kegs for containing flavored syrups.
- 1 pair of scales.
- 4 glass graduates, minim, 1 ounce, 4 ounces, and 16 ounces.
- 1 saccharometer and acidimeter and glass.
- 1 No. 12 wedgewood mortar.
- 2 percolators, one glass and one tin.
- 6 tunnels, one each of glass and of tin, pint, quart, and two quarts.
- 2 tin tunnels, with strainers.
- 1 tunnel supporting-stand.
- 1 tin dipper, with a long handle, capacity two quarts.
- 2 extract bottles, with names, one gallon capacity each.
- 6 strainer-bags of felt or cotton flannel, funnel-shaped, three gallons capacity each.
- 3 wire filter-paper paper-racks.

SYRUP FORMULAS.

Plain or Simple Syrup.

Granulated Sugar	50 pounds
Filtered Water	4 $\frac{1}{4}$ gallons

Heat gradually sufficient to dissolve the sugar. Do not boil. Stir with a wooden spatula. Filter while hot through a flannel, felt, or silk bag. This syrup will indicate *while hot*, thirty-two degrees on the saccharometer. When about to use, reduce with filtered water to thirty degrees.

To make Syrup Brilliant.

To produce a perfectly transparent beverage for use of bottlers and others, it is simply necessary to follow these directions: —

Mix 1 ounce of powdered carbonate of magnesia with each gallon of *flavored* syrup, and filter through fine flannel.

A little of the first run should be filtered a second time until it runs clear. The improved appearance of the beverage makes the process a most desirable one.

Soda Foam.

Tufts' Dry Soda Foam (one package)	4 ounces
Alcohol	4 “
Water	sufficient

Place the Dry Soda Foam in a pint-bottle and fill with water; place the bottle in hot water for several hours; when cold, strain through cloth and allow to settle until it becomes clear. Decant; add the alcohol and enough water to make it measure 1 $\frac{1}{2}$ pints. This will never spoil. Be careful not to use enough to taste. Never add foam to syrup until about to use it.

Fruit Acid.

Citric Acid or Tufts' Citric Phosphate	4 ounces
Boiling Water	8 “

Dissolve thoroughly and strain through a flannel cloth. Keep this acid solution in a glass or stone bottle or jug, well corked. Prepare in small quantities, as it will become musty if kept too long. Use from 1 to 5 ounces of this solution to each gallon of syrup.

Tartaric-Acid Solution.

Tartaric Acid	4	ounces
Hot Water	8	"

Dissolve the acid in the hot water and filter through paper.

Never keep much of this solution in stock, as dissolved tartaric acid is a very unstable article, and apt to deteriorate on short notice. Use from 1 to 5 ounces to each gallon of syrup.

Acid Phosphate. (Citric.)

MAKE a solution of Tufts' Citric Phosphate the same as if with citric acid, using one fifth more citric phosphate than citric acid, — citric phosphate 1½ pounds, boiling water 1 quart; or in larger quantities in the same proportion. Dissolve thoroughly and filter through fine flannel, felt, or paper. Of this solution use from 1 to 5 ounces to each gallon of syrup.

IN all the following syrups the proportion for each half-pint is 1 to 1½ ounces, but this may be varied as desired: —

Birch-Beer Syrup.

Simple Syrup	1	gallon
Tufts' Birch-Beer Extract	2	ounces
Tufts' Soda Foam	1½	"
Tufts' Sarsaparilla Color	1	ounce

Champagne Pear-Cider Syrup.

Simple Syrup	1	gallon
Tufts' Pear-Cider Extract	2	ounces
Fruit Acid	4	"
Tufts' Soda Foam	1½	"
Tufts' Sarsaparilla Color	1½	"

Coffee Syrup.

Simple Syrup	1	gallon
Tufts' Coffee Extract	8	ounces
Tufts' Sarsaparilla Color	1	ounce

Cream-Soda Syrup.

Simple Syrup	1	gallon
Tufts' Cream-Soda Extract	2	ounces
Tartaric-Acid Solution	1	ounce
Tufts' Soda Foam	1	"

GINGER-ALE.

THERE are four Ginger-Ale Extracts made, — one for dispensing and three for bottling.

“Tufts' Ginger-Ale Extract” is for use at the dispensing counter, and is a highly concentrated fluid extract.

“Tufts' Ginger-Ale Extract Soluble” is a concentrated fluid extract, which makes a clear and brilliant beverage for bottling.

“Tufts' Solid Belfast Ginger-Ale Extract” is a concentrated extract, about the consistency of dough; it has an aromatic flavor, and makes, when bottled, a clear and brilliant beverage.

“Tufts' Hub Ginger-Ale Extract” is condensed to about the consistency of syrup, is easily handled, produces a large amount of goods, and bottles a clear, brilliant, and highly aromatic beverage.

In ordering care should be taken to clearly indicate which is wanted.

Ginger-Ale Syrup.

Simple Syrup	1	gallon
Tufts' Soluble Ginger-Ale Extract	3	ounces
Tufts' Fruit Acid	2½	“
Tufts' Soda Foam	1	ounce
Tufts' Sarsaparilla Color (always color to suit)	½	“

Belfast Ginger-Ale.

Tufts' Solid Belfast Ginger-Ale Extract	1	pound
Best Granulated Sugar	40	pounds
Warm Water	8	gallons

Dissolve the sugar in the water, making a syrup. Take a small quantity of this syrup and dissolve all the extract in it, so that there are no lumps; then mix with balance of the syrup thoroughly, and filter.

To make a temporary filter, take a large tub, perfectly clean and sweet, with a faucet at the bottom; over the top stretch a clean, wet cotton cloth, firmly secured in position by a cord around the outside of the tub; press the cloth down firmly in the centre with the hand, and lay on it a large No. 80 size filter paper. With a long-handled dipper or ladle, pour the mixture on the centre of the filter until it is full. Draw from the tub the first run, and if not clear return it to the mixture; it will soon be as brilliant as pale brandy.

Add 15 ounces Tufts' Liquid Soda Foam and 2¼ ounces Tufts' Sarsaparilla Color.

To each gallon of syrup add 1 ounce Tufts' Fruit Acid, made by dissolving 1 pound citric acid, or Tufts' Citric Phosphate, in 1½ pints of water. Add this just before using.

The above will make a better Ginger-Ale than any other now in the market and will cost, including corks and charged water, but twenty cents per dozen quarts, and ten cents per dozen half-pints.

To make the best grade of goods, use $1\frac{1}{2}$ pounds Solid Ginger-Ale Extract and 48 pounds sugar to 7 gallons water.

Use 4 ounces each to quarts. Use $1\frac{1}{2}$ ounces each to half-pints.

Hints.

THE Ale is more brilliant if the syrup is used the day it is made. The filter when set, can be used for several lots. The filter tub should be scalded after use, to keep it sweet. Tin-lined copper tanks are preferable to tubs for mixing and filtering. I can supply such of twenty-five gallons capacity for \$17.00.

Acid, Foam, and Color must not be added until after filtering.

The best way to use Sarsaparilla Color is to mix a pint of color and a pint of hot water and filter. Use $\frac{1}{2}$ ounce to the gallon.

You can make your own Foam as follows: —

Take of Tufts' Dry Soda Foam 4 ounces (one package); place in a pint-bottle and fill with water; place the bottle in hot water for several hours; when cold strain through cloth and allow to settle until it becomes clear. Decant; add 4 ounces alcohol and enough water to make it measure $1\frac{1}{2}$ pints. This will never spoil. Be careful not to use enough to taste.

Color and Foam vary greatly in strength. Always color to suit, and never use Foam enough to taste. Never add Acid and Color one immediately after the other. Use the Foam between these two. Do not use any Foam in goods for shipment. Use the best quality of color. Cheap color is never good. Licorice in color makes beverage ropy. Too much Foam makes beverage ropy. Never add Acid until ready for use.

The same Ginger-Ale does not suit all localities. If you wish your beverage stronger, use more Extract; if sweeter, use more sugar; if drier, use more Acid. Stick to our method of manipulation. The quality depends to a great degree on the method.

Hub Ginger-Ale Syrup.

MIX thoroughly $1\frac{1}{2}$ ounces Hub Ginger-Ale Extract with 2 ounces powdered carbonate of magnesia, in a mortar, add 8 gallons hot water and filter through filter paper, then add 1 ounce Sarsaparilla Color, 4 ounces Soda Foam, 3 ounces Fruit Acid, 2 quarts Lime Juice, and 50 pounds granulated sugar. Mix thoroughly and strain through cloth.

Use 2 ounces to each half-pint bottle.

West India Lime Fruit Juice.

LIME juice, the use of which in carbonated goods is of quite recent date, is daily increasing in favor with the bottling trade. I advise its use in ginger-ale,

as it adds a fine fruity flavor. When lime juice is used the quantity of citric acid or citric phosphate may be decreased. I keep it constantly in stock, and sell it at manufacturers' prices. Bottlers cannot well afford to do without it.

Directions for Use for Ginger-Ale and other Acidulated Beverages.

USE from 3 to 8 ounces of lime juice to the gallon of syrup, adding sufficient citric acid or Tufts' Citric Phosphate to produce the desired acidity. There are so many different formulas for ginger-ale, etc., in use, and tastes differ so much as to the acidity of drinks, that it is impossible to give definite instructions as to exact quantity required.

Oil of Lemon.

It is conceded that oil of lemon is the most difficult to handle successfully of all the ingredients used in the manufacture of syrups. For this reason I strongly urge the bottler to use my Soluble Lemon Extract, which is economical and always gives satisfaction. The higher standard required in the goods of the present day requires more scientific treatment than the old methods. In bottling Lemon Soda, the bottler who cuts his own oil of lemon is frequently annoyed to find the oil separating from and rising to the top of the syrup. To remedy this difficulty and prevent the bottled beverage from becoming roily and cloudy, the following method of manipulating is recommended: —

In cutting oil of lemon use 20 parts 95 per cent alcohol to 1 part of the oil, in order to thoroughly dissolve the latter. This excess of alcohol serves as a preservative of the bottled beverage, besides preventing waste of valuable oil.

After the oil has been thoroughly incorporated with the alcohol add 7 parts water. This will cause the excess of oil or resinous matter, if any, to separate. To each gallon of this solution add from 2 to 4 ounces carbonate of magnesia, agitate briskly, and filter through filtering paper. If the first filtering does not render the solution brilliant, refilter through the same paper. The result will be a clear, thoroughly blended flavor.

The refuse filter paper can be washed with water and any excess of oil recovered for future use.

Lemon Syrup.

Simple Syrup	1	gallon
Tufts' Soluble Lemon Extract	3	ounces
Tufts' Fruit Acid	1	ounce
Tufts' Soda Foam	1	"

To keep Bottled Lemon Soda Bright.

To each gallon of flavored syrup add 1 ounce of powdered magnesia, filter through felt or fine flannel. If run through filter a second time a still better result is obtained.

JAMES W. TUFTS' BOOK OF DIRECTIONS.

Nectar Syrup.

Simple Syrup	1	gallon
Tufts' Nectar Extract	1	ounce
Madeira Wine	8	ounces

Nerve-Tonic Syrup.

Simple Syrup	1	gallon
Tufts' Nerve-Tonic Extract	2 1/2	ounces
Tufts' Sarsaparilla Color	1	ounce
Tufts' Soda Foam	1	"

Orange-Phosphate Syrup.

Simple Syrup	1	gallon
Tufts' Extract Orange (soluble)	3	ounces
Tufts' Fruit Acid	1 1/2	"
Tufts' Fruit Color	1/2	ounce
Tufts' Sarsaparilla Color	1	"
Tufts' Soda Foam	1 1/2	ounces

Peruvian Beer, Ottawa Beer, or Root Beer.

Simple Syrup	1	gallon
Tufts' Peruvian Beer Extract	5 1/2	ounces
Tufts' Fruit Acid	2	"
Tufts' Soda Foam	1	ounce

Pear Syrup.

Simple Syrup	1	gallon
Tufts' Pear Extract	1	ounce
Tufts' Fruit Acid	1	"
Tufts' Soda Foam	1	"

Pine-Apple Syrup.

Simple Syrup	1	gallon
Tufts' Pine-Apple Extract	1	ounce
Tufts' Fruit Acid	1	"
Tufts' Soda Foam	1	"
Tufts' Yellow Vegetable Color	1	"

Raspberry Syrup.

Simple Syrup	1	gallon
Tufts' Raspberry Extract	1	ounce
Tufts' Fruit Acid	1	"
Tufts' Soda Foam	1	"
Tufts' Fruit Color	1/2	"

Sarsaparilla Syrup.

Simple Syrup	1	gallon
Tufts' Sarsaparilla Extract	1/2	ounce
Tufts' Sarsaparilla Color	1	ounces

Sherbet Syrup.

Lemon Syrup	} equal parts.
Pine-Apple Syrup	
Vanilla Syrup	

Strawberry Syrup.

Simple Syrup	1	gallon
Tufts' Strawberry Extract	1	ounce
Tufts' Fruit Acid	1	"
Tufts' Soda Foam	1	"
Tufts' Fruit Color	½	"

Tonic-Beer Syrup.

Simple Syrup	1	gallon
Tufts' Tonic-Beer Extract	1 ½	ounces
Tufts' Sarsaparilla Color	2	"
Tufts' Soda Foam	1	ounce

Vanilla Syrup.

Simple Syrup	1	gallon
Tufts' Concentrated Vanilla Extract	1 ½	ounces

Wintergreen or Checkerberry Syrup.

Simple Syrup	1	gallon
Tufts' Extract Wintergreen	½	ounce

Mineral-Waters.

FORMULAS for artificially reproducing all the popular mineral-waters will be found on pages 64-68.

CARBONATING CIDER.

Champagne Cider.

EVERY bottler of soda-water beverages should bottle cider. Carbonated or champagne cider is preferable to fermented cider, as it will not change after bottling.

A sound, old, refined cider, which has completed its first fermentation, should be obtained, and when carbonated it is ready for immediate consumption.

It will be found superior to most, and equal to the best fermented cider, which has aged six months in bottles.

Cider for carbonating must be refined in the fall just before it completes its first fermentation, say three to six weeks old. Cider made late in the season is superior in quality and for keeping.

To refine Cider: Dissolve one ounce Russian Isinglass in one gallon of water. Use one quart of this to each barrel of cider. Let the cider stand from five to ten days and filter.

To make a Filter: Take a forty-gallon barrel with but one head, insert in its centre a false bottom, made of a perforated board; place on this a layer of coarse gravel, which should be large enough not to pass through the holes. On the gravel, place washed, fresh-water beach or quartz sand six inches deep.

Wet the sand and tamp it down upon the gravel.

In the open head of the barrel place a ten-gallon keg without heads, which insert about two inches into the sand.

This acts as a funnel, and prevents the cider from getting through unfiltered between the sand and the side of the barrel. If the sand passes through with the filtered cider, re-filter until the sand ceases to pass.

This filter must be kept in constant use; if necessary, by re-filtering the same cider, as it is liable to sour if unused for a few days, and the next run would be vinegar. If the filter works slow, scrape off a little of the top sand, and put on fresh sand. After refining and filtering lay away in a cool cellar in an even temperature.

Rack off to get rid of any sediment not removed in filtering before carbonating.

If a new cider is to be used, it can be preserved.

For preserving cider for bottling purposes we recommend Billings, Clapp, & Co.'s Neutral Sulphite of Lime. When the natural fermentation has been carried forward just far enough to impart to the cider the taste which is most preferred, the addition of this preparation will check it, and the barrel can be bunged and the cider allowed to settle, the cider remaining sweet and sparkling for years.

Cider thus preserved does not require either refining or filtering, but should be carefully racked.

The cider-barrels should be laid upon their sides and allowed to remain undisturbed for several weeks to let the sediment settle.

The cider can then be racked into a clean barrel by means of a siphon composed of a piece of half-inch rubber-tubing of suitable length.

In order that the sediment shall not be disturbed, one end of the rubber-tube should be tied to a stick, of suitable length, in such a manner that when the stick is inserted through the bung-hole, and rests upon the opposite side of the barrel, the end of the tube will remain five inches above the bottom.

Care should be taken not to move the barrel, or in any way disturb the cider before racking.

CHARGING ALE, CIDER, AND WINE WITH CARBONIC-ACID GAS.

THE illustration on the next page represents an apparatus arranged for charging ale, cider, or wine with carbonic-acid gas.

The advantages of charging these beverages with gas artificially produced are generally well understood; but apparently insurmountable practical objections have heretofore stood in the way, which are now overcome by the simple inventions here illustrated and described.

For those to whom this subject is new, I will state the advantages to be gained and the difficulties to be overcome.

Ale, cider, and wine after bottling undergo a secondary fermentation, the object of which is the production of the carbonic-acid gas which renders the beverages bright and sparkling, and without which they are dull, flat, and insipid. Incidentally this secondary fermentation produces various undesirable products, which form the lees or ullage, no inconsiderable portion of the valuable liquid, which must be thrown away, as it is both unsightly and disagreeable to taste, and makes it necessary to open the bottle with great care in order that the sediment shall not be disturbed and diffused through the beverage.

The great cost of natural champagnes is largely due to an expensive process of handling, by means of which they are freed from this sediment or crust.

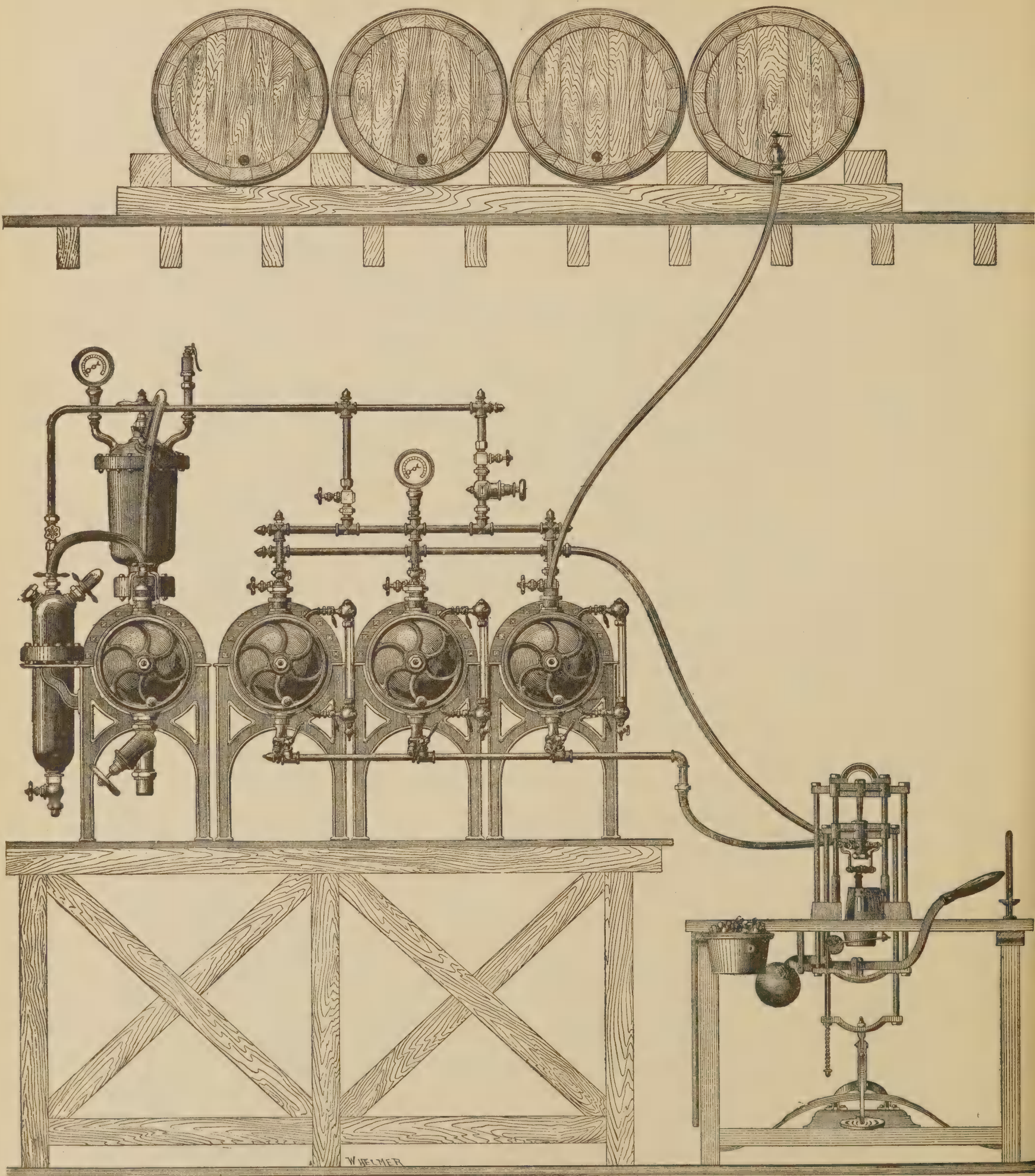
The secondary fermentation requires time — weeks, and often months — and thus locks up large amounts of capital.

By charging with purified carbonic-acid gas artificially, the secondary fermentation is rendered unnecessary. The beverage is ready for immediate consumption, and no sediment is produced in it.

The advantages gained are so great that charging artificially, which is now practised in some few establishments in this country and in many in England, would doubtless have become general, if it were not for the enormous waste entailed by the processes of bottling under pressure. These beverages, unlike soda-water, foam strongly during the process of bottling, and consequently, by ordinary methods of bottling, nearly as much is wasted in venting as is bottled.

In my apparatus this difficulty is, for the first time, entirely overcome.

The cylinders in which the beverage is charged being elevated six feet or more above the bottling-table (preferably upon an upper floor), and the liquid being drawn from the bottom while the gas from the vent is returned into the top of the same cylinder, the gas is not allowed to expand, and the beverage by



APPARATUS FOR BOTTLING ALE, CIDER, AND WINE.

its own gravity flows gently and without foaming into the bottle. By means of my newly invented filling-head the inlet and vent are both opened and closed at exactly the same moment ; and consequently it is not necessary to waste any of the valuable fluids during bottling.

As a specially arranged apparatus is required, all experiments made with ordinary bottling apparatus will fail ; but I will guarantee success and entire satisfaction with mine when arranged for the purpose.

Directions for Operating the Apparatus.

PLACE the ale, cider, or wine in a position where it can easily be drawn off from the barrel ; vent it, and allow the gas to pass off. When the gas has all escaped, draw out the top bung and allow the beverage to stand until bright and clear, which can be ascertained by drawing off a small portion with a siphon into a tumbler.

When free from all cloudiness it should be drawn off into the bottling-cylinders, a current of carbonic-acid gas turned on from the generator, and the gas and liquid thoroughly agitated until the gauge indicates forty-five pounds pressure. While the gas is running into the cylinders, the small vent-cocks on the cylinder-caps should be opened to allow the atmospheric air to escape. The air will be forced out before the gas, which is the heavier, and will be known by its pungent odor. When gas escapes from the vent-cock, close it.

Place a bottle under the filling-head of the bottling-table, and by placing the foot upon the treadle bring the filling-head down, making an air-tight connection with the bottle. Insert a soaked cork in the top of the filling-head, and with the hand-lever force the cork down until it fits tightly, taking care not to drive it too far, as by so doing the passage through which the liquid passes into the bottle may be partly or wholly closed.

Raise the handle of the filling-head valve and allow the liquid to flow into the bottle ; when the bottle is filled to the ordinary height, close the filling-head valve by pressing down the handle quickly, and drive the cork into the bottle.

Remove the bottle with a pair of bottling-tongs to the tyer at the right-hand side of the table, and secure the cork by means of a fine wire.

If a fine-flavored beverage is used the result obtained by this method will be much more satisfactory than that obtained by waiting the ordinary length of time for a secondary fermentation, wherein nothing beneficial is obtained other than the carbonic-acid gas. (P. J. MAGUIRE.)

Carbonating Ale.

ALE to be bottled under carbonic-acid-gas pressure is prepared for bottling exactly as if it were to be bottled by the old process. In the old process carbonic-acid-gas pressure is formed by secondary fermentation.

CARBONATING WINES.

Imperial California Champagne

California Hock	40 gallons
Tufts' Raspberry Extract	1 quart
Syrup Body	4 gallons
Water	2 "
Old Brandy	½ gallon

Filter through the best seamless felt, and bottle at a pressure of 60 pounds in summer and 70 pounds in winter.

Scuppernong Champagne.

Scuppernong Wine	40 gallons
Syrup Body	3 "
Water	2 "
Old Brandy	½ gallon

Filter through the best seamless felt, and bottle at a pressure of 60 pounds in summer and 70 pounds in winter.

Catawba Champagne.

Catawba Wine	38 gallons
Angelica Wine	2 "
Syrup Body	4 "

Filter through the best seamless felt, and bottle at a pressure of 60 pounds in summer and 70 pounds in winter.

Syrup Body.

Sugar	30 pounds
Water	2 gallons
White of one Egg.	

Heat to boiling point and simmer to a "candy degree," then filter through fine felt.

To Fine Wine.

TAKE the finest Russian isinglass, cover with just sufficient wine, add daily of the wine until the isinglass ceases to absorb it, and this will take six or eight days; then squeeze it through a piece of linen and add five per cent of alcohol to preserve. Take 1 teaspoonful of the isinglass thus prepared, add a pint

JAMES W. TUFTS' BOOK OF DIRECTIONS.

of wine and a pinch of salt, then beat up with a whisk, adding by degrees sufficient of the wine until the mixture measures $\frac{1}{2}$ gallon, then add to the 40 gallons to be carbonated.

The following letter from one of my travelling salesmen is suggestive.

MONTREAL, QUEBEC, JUNE 7th, 1889.

MR. JAMES W. TUFTS, —

I have been spending these last few days with Barre & Co. charging Champagne to be dispensed through Counter Tube.

In letters from you I was advised to charge at 60 to 70 but I find that the best effects are to be had in proportion to increase of pressure. The first lot of wine I charged at 120 pounds. The last at 200 pounds and it is now on draught at one hotel in Montreal, and the last is considered the best.

In dispensing through a counter tube a Robbins attachment is indispensable, and the wine drawn through that tube retains its foam longer than wine (Champagne) drawn from a bottle.

DIRECTIONS FOR SETTING UP AND OPERATING TUFTS' SODA-WATER BOTTLING APPARATUS.

To Set Up the Apparatus.

IN order that no difficulty shall be experienced in connecting the brass pipes of the bottling apparatus, it is necessary that the floor shall be level, and strong enough to bear the weight which it is proposed to place upon it, without sagging, and also that the frames shall be exactly in line.

The first step to be taken, therefore, is to have a carpenter examine the floor and its supports and if necessary level and strengthen them. The location of the apparatus having been decided upon, a chalk line should be drawn upon the floor, against which the front of the frames can be brought into line.

A suitable hoisting tackle (blocks and falls) and a strong eyebolt with nut should be provided with which to handle the heavy parts of the apparatus. These can be obtained at the nearest machine shop. The eyebolt should be passed through a hole bored vertically through a beam in the ceiling, above the position in which the apparatus is to be placed, and secured by its nut on the floor above. In case this cannot be done a tripod of suitable height should be constructed of three stout pieces of timber, by fastening the upper ends securely together with a rope, spreading the lower ends into the desired position and fastening one to another with a rope in order to prevent slipping.

The cases containing the generators and cylinders should be moved into the shop by means of wooden rollers, and the tops and sides torn off, leaving the pieces of apparatus standing upon the platforms or bottoms of cases. The frames should also be removed from the crates.

A sling or loop of rope, of the proper length, should be caught under the front and rear stuffing-boxes of the agitator shaft of the piece to be first lifted. By crossing the sling into the form of a figure 8 it can be made to assist in supporting the vitriol pot, or purifier (if the purifiers are located upon the cylinders) in an upright position while being hoisted.

The sling being adjusted, the generator or cylinder can be hoisted and lowered into its frame, which should then be carefully slid along the floor into

its proper position on the chalk line previously mentioned. Care should be exercised in sliding the piece of apparatus on the floor, not to break the frame, and the floor should be waxed or soaped, to enable the frame to slide as easily as possible. When all the pieces have been placed in their frames, the pipes can be attached in the manner shown in the cut in this book, which illustrates that particular style of apparatus.

All bow pipes are now made like those shown in cut of Quelle, inserted between pages 154 and 155, in order that additional cylinders may be added to the apparatus, whenever required, without necessitating new pipes.

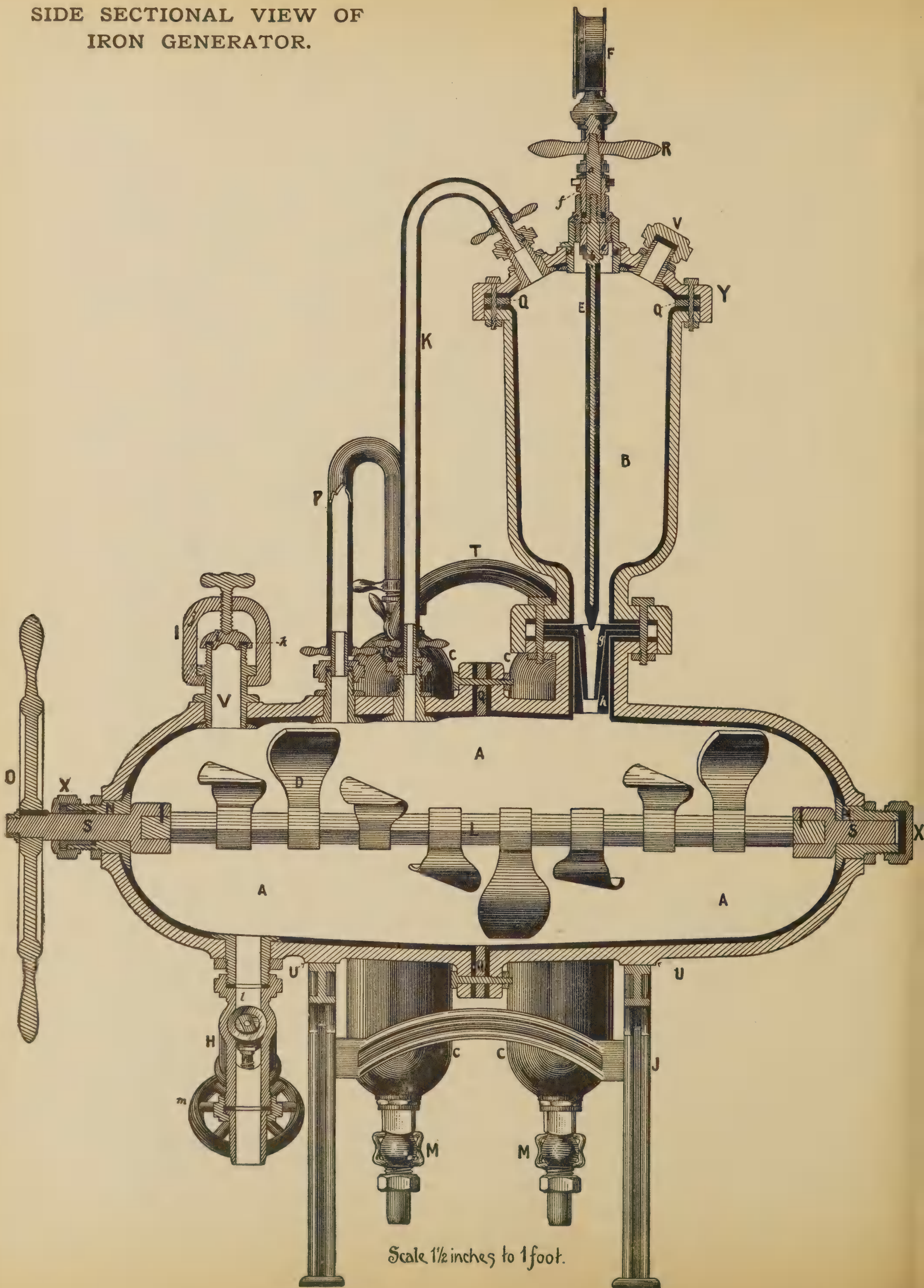
Table of Capacities, Weights, and Measurements of Tufts' Iron Generators and Cylinders.

No. of Generator. Also capacity in gallons at a dispensing pressure of 150 pounds.	Capacity of Generator in dozens of one-half- pint bottles, at a bottling pressure of 60 pounds. ¹	Total capacity in gal- lons of Generator body.	Total capacity in gal- lons of Vitriol-Cham- ber.	Total capacity in gal- lons of each Cylinder or Fountain.	Total capacity of each top or detached Purifier. Side Purifiers contain but one half these quan- tities.	Weight in pounds of Generator, including three side Purifiers.	Weight in pounds of Cylinder, and Frame without Purifier.	Extreme height in feet and inches of Generator, including Gauge.	Extreme length in feet and inches of Gen- erator.	Width of Frame. (Frames of Generators with side Purifiers are 1 foot to 2 feet wider.)
100	166	17	3	17	3	750	575	6-6	4-9	1-8½
150	243	25	4½	25	4½	1075	850	6-9½	5-4	1-10
200	333	33	6	33	6	1325	1150	7-3	5-4	1-11
250	415	41	7½	41	7½	1575	1262	7-6	6-8	2
330	544	55	10	55	11	2250	1780	8	7-2	2-3
450	747	75	13½	77	13½	3100	2400	8-3	7-2	2-4
750	1245	125	22½	130	23½	5150	4075	7-5	7-9	2-11
1000	1660	170	30	175	31	8200	5960	7-9	8-6½	3

Bottling-Table boxed, weighs 575 pounds.

¹ By the use of a pump to force water into the cylinders against pressure, the number of bottles filled is increased one fourth. Prices of Bottling Apparatus are given in Apparatus Catalogue, which will be sent free on application to any one thinking of purchasing.

SIDE SECTIONAL VIEW OF
IRON GENERATOR.



Scale 1½ inches to 1 foot.

Construction of Tufts' Horizontal Generator.

THE accurate sectional illustration on page 126 shows the construction of my iron generator. Whatever the style of the generator, the construction is substantially the same.

The generator shown has two side purifiers. Some of my generators have a purifier on top, and some sets of bottling apparatus have the purifiers on the cylinders. The illustration shows a longitudinal section, and an end section through the acid-chamber, and the purifier. My cylinders are made in the same manner as the generator, the only difference being a block-tin lining instead of lead, an agitator of pure block-tin, shown on page 136, the absence of the acid-chamber and the blow-off cock, and the introduction of pipes properly arranged to admit the gas and allow the charged water to be drawn off.

The construction of my copper apparatus differs but little from the iron.

Attention is called to the following points wherein I claim superiority for my generators over all others: —

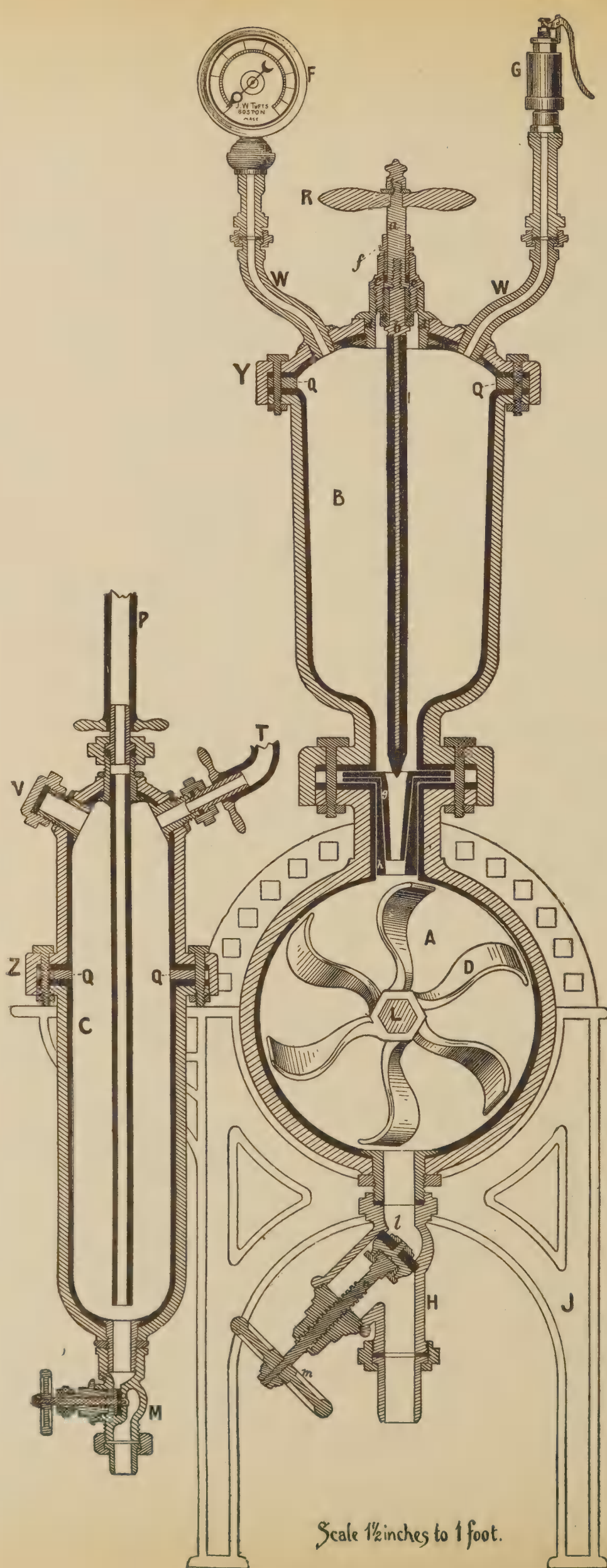
First. The lining in my generators, indicated by the black line, is made unusually heavy in order to prevent collapsing. Each section is made of a single sheet formed into shape.

Second. The agitator blades **D**, the shaft **L**, and the journals **S S**, being separate, injury to one does not necessitate the renewal of all.

Third. The pressure-gauge **F** and the safety-valve **G** being located on the acid-chamber, and connected with the alkali-chamber **A** by a direct equalizing-pipe **K**, the gas-pipe **P**, may become choked without interfering with the action of either gauge or safety-valve.

(The gas-pipe **P** is only liable to become choked by too rapid reduction of pressure in the generator, which allows the gas to expand and swell the mass, so as to fill up the generator. Opening the cock, which allows the gas to pass into the cylinders or fountains too quickly, is the cause of this "foaming," and the rapid rush of gas through the gas-pipe **P** often carries enough marble, acid, and water with it to choke the gas-pipe. While the gas is passing through the gas-pipe **P** into the purifiers **C**, the current of gas in the equalizing-pipe **K** is *from* the acid-chamber **B** *into* the alkali-chamber **A**. This downward pressure of gas keeps the equalizing-pipe **K** clear at all times, and insures the correct action of the pressure-gauge and safety-valve. In all other makes of generator, choking the gas-pipe prevents the pressure-gauge from registering correctly the pressure in the alkali-chamber because the equalizing-pipe passes from the purifier to the acid-chamber.)

Fourth. The gas-pipe **P** is made so much larger than the pipes leading from the purifier to the cylinders or fountains that the liability of choking is greatly lessened; a very rapid flow in the small pipes causing a comparatively slow flow in the large pipes.



END SECTIONAL VIEW OF IRON GENERATOR.

- A. Marble-chamber.
 - B. Acid-chamber.
 - C. Purifier.
 - D. Agitator blade.
 - E. Acid-valve.
 - F. Pressure-gauge.
 - G. Safety-valve.
 - H. Blow-off cock.
 - I. Clamp and cap.
 - J. Frame.
 - K. Equalizing-pipe.
 - L. Agitator shaft.
 - M M. Purifier blow-off cocks.
 - N N. Agitator journal-boxes.
 - O. Agitator wheel.
 - P. Gas-pipe.
 - Q Q. Rubber gaskets.
 - R. Acid-valve handle.
 - S S. Agitator journals.
 - T. Gas-pipe connecting purifiers.
 - U U. Lugs or ears.
 - V V. Filling-bungs.
 - W W. Brass horns.
 - X X. Journal-box nut for agitator end.
 - Y. Acid-chamber hood.
 - Z. Purifier hood.
-
- a.* Socket screw for raising acid-valve.
 - b.* Brass core of acid-valve stem.
 - c.* Stuffing-box.
 - d.* Acid-valve nipple.
 - e.* Square socket which prevents acid-valve from turning.
 - f.* Stuffing-nut.
 - g.* Acid-valve seat.
 - h.* Fitting which supports acid-valve seat.
 - i.* Clamp cap of filling-bung.
 - j.* Yoke of filling-bung clamp.
 - k.* Rubber washer.
 - l.* Valve of blow-off cock.
 - m.* Wheel of blow-off cock.
 - n.* Blow-off cock valve spindle.
- The black line indicates the lead lining.

Scale 1 1/2 inches to 1 foot.

Fifth. The pressure-gauge and safety-valve being on separate pipes, an accident to the one will not affect the other.

Sixth. The acid-valve **E** being raised and lowered by the simple device shown (*a b c d e* and *f*), which is operated by turning the handle **R**, all danger of the acid-valve being opened by the pressure in the alkali-chamber is avoided. The square shoulder *e* prevents the valve-stem **E** from turning, and the hollow socket-screw *a* raises the valve vertically, drawing it up by means of the screw *b*. When this acid-valve is closed, it can only be opened by turning the handle **R**.

Seventh. The acid-valve **R E** can be removed from the acid-chamber **B** without removing the hood **Y**.

Eighth. The acid-valve seat *g* being removable, in case of accident (to this the most vulnerable part of any generator), a new one can be substituted at a small expense. In all other makes of generators, it is necessary to send either the acid-chamber or half the alkali-chamber to the manufacturer to have proper repairs made in case of damage to the acid-valve seat.

The experience of many bottlers shows that an injured acid-valve seat cannot be satisfactorily repaired by the average mechanic.

Ninth. The safety-valve **G** is so constructed that the gas cannot reach the spring. It is so placed that marble dust cannot fill it up.

In case too much pressure is generated, it blows off the superfluous pressure only, and does not waste the whole charge.

Tenth. The clamp and cap **I** on the large filling-bung admits of a rapid and safe reduction of pressure, when necessary; besides being much more convenient to handle than a screw-cap, which requires the use of a wrench. The screw-cap and wrench are furnished, however, in addition to the clamp and cap.

Eleventh. The frame **J** is made unusually strong, and the braces so shaped that they can be got under from any side to tighten a bolt, or with the broom in sweeping.

Twelfth. The ears **U U**, which fit into chocks in the frame **J**, prevent the generator from rolling over.

Thirteenth. The agitator wheel **O** being of large size makes the operation of agitating easy.

Fourteenth. The marble-chamber filling-bung is of unusually large size, facilitating filling. For No. 250 and larger sizes I furnish a copper tunnel which screws on to the filling-bung, leaving no shoulder to obstruct the passage of marble dust. The filling-bungs of cylinders are completely and thoroughly tinned.

Table of Capacities of Tufts' Old-Style, Copper Generators.

STYLE.	Capacity in Gallons at a Dispensing Pressure of 150 Pounds.	Capacity in Dozens of Half-pint Bottles Filled at a Single Charge.	Capacity of Generator.	Capacity of Vitriol Chamber.	Capacity of Purifier.
500	500	830	80	16	15
A	340	610	57	11	11
B	200	333	33	6	6
	125	222	21	4	4
D	100	166	17	3	3

Capacity Tufts' Old-Style, Tinned, Copper Cylinders.

No. 1.	Total capacity	47 gallons.
No. 2.	" "	29 "
No. 3.	" "	23 "

Table of Proportions to Use in Operating James W. Tufts' Generators.

FROM the most reliable authority, as well as from practical experience, I submit the following as producing the best results with the least trouble: —

SIZE.	Capacity of Generator Body in Gallons.	Gallons of Vitriol.	Pounds of Soda.	Pounds of Marble Dust.	Gallons of Water in Generator Body.	Gallons of Water in each Top or Detached Purifier.	Gallons of Water in each Side Purifier.
100	17	3	6	69	7	2¼	1¼
150	25	4½	9	103½	10	3¼	1¾
200	33	6	12	138	13	4½	2¼
250	41	7½	15	172½	15½	5¾	3
330	55	10	20	230	21	7½	3¾
450	75	13½	27	310½	29	10	—
750	125	22½	45	517½	48½	17	—
1000	170	30	60	690	67½	22½	—

In the absence of soda, the quantity of marble dust should be increased to the weight prescribed for soda and marble combined.

THE GENERATOR.

IN charging the generator the addition of bicarbonate of soda to the marble dust is advised, as it softens the mass and causes the gas to be generated more freely; besides rendering agitation easier, and facilitating cleaning the generator after the charge is exhausted.

Never use material to exceed nine tenths the capacity of the generator body. As 1 gallon of water and 1 gallon of marble dust, when thoroughly mixed, make but 1½ gallons, this amount will fill the generator body about three-fourths full when all the acid has been let down. If more is used, foaming is liable to occur, clogging the pipes and spoiling goods. In measure always use more water than carbonate.

15 pounds Sulphuric Acid	are equal to 1 gallon
13½ " Marble Dust	are equal to 1 gallon
25 " Marble Dust will neutralize 15 pounds Sulphuric Acid	

An ordinary water-pail will contain 2½ gallons. Fill the purifiers three-fourths full of water. Always *agitate slowly*.

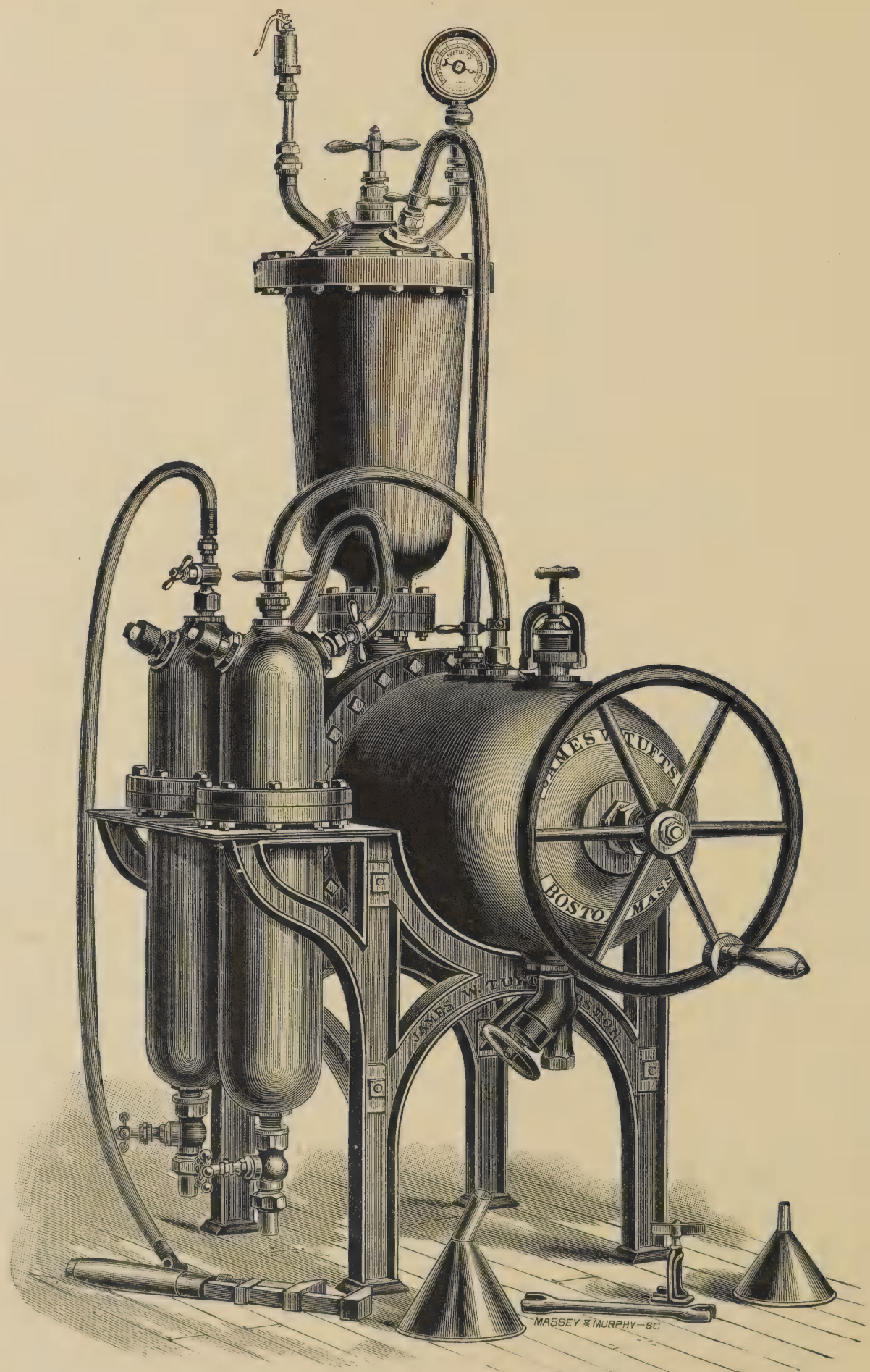
The use of two generators is recommended in bottling, as while the first is in use, the second may be cleaned and filled.

Chemical Purification.

THE following is from the "Bottler's Gazette": —

"Where it is desirable to have resort to the chemical purification of the carbonic acid, I can recommend, above all, the chemical called permanganate of potassium, which works magically in all cases. Another chemical, the bicarbonate of soda, which is perhaps better known to bottlers, works in connection with purifiers, with excellent results also. It is used as follows: Take one ounce of it, and add the same, previously dissolved, to the water of a medium-sized purifier, and use the purifier same as before. The bicarbonate of soda being an alkali, all particles of sulphuric acid that are carried through the liquid will neutralize immediately when coming in contact with soda, forming gas, and consequently the carbonic acid will be purified thoroughly."

To those who are desirous of obtaining pure gas for their carbonated beverages, and more especially for the delicate mineral-waters, where they are most needed, I should recommend the use of either of the above-mentioned alkalies, renewing them, as well as the water, daily. Bottlers who possess more than one purifier, I should advise to use the solution of bicarbonate of soda in the purifier into which the gas enters from the generator first, and a solution of permanganate of potassium in the second, when they will soon observe a great change in the quality of their carbonated beverages of which carbonic acid is the great factor.



GENERATOR, WITH SIDE PURIFIERS.

TO CHARGE THE GENERATOR.

CLOSE the discharge valves at bottoms of purifiers. Fill the purifiers three-fourths full of water, through the filling-bungs, and close tightly by screwing the caps on filling-bungs firmly with the wrench. Side purifiers require only about one half the quantity of water needed in top or detached purifiers.

Close the blow-off cock below the generator and pour into the generator body, through the filling-bung, the prescribed amount of water. Mix thoroughly the requisite amount of bicarbonate of soda and coarse marble dust, and having inserted the funnel in the filling-bung, add gradually to the water, turning the agitator as the mixture is supplied. The marble dust should always be sifted, to remove nails or other hard substances which might injure the lining.

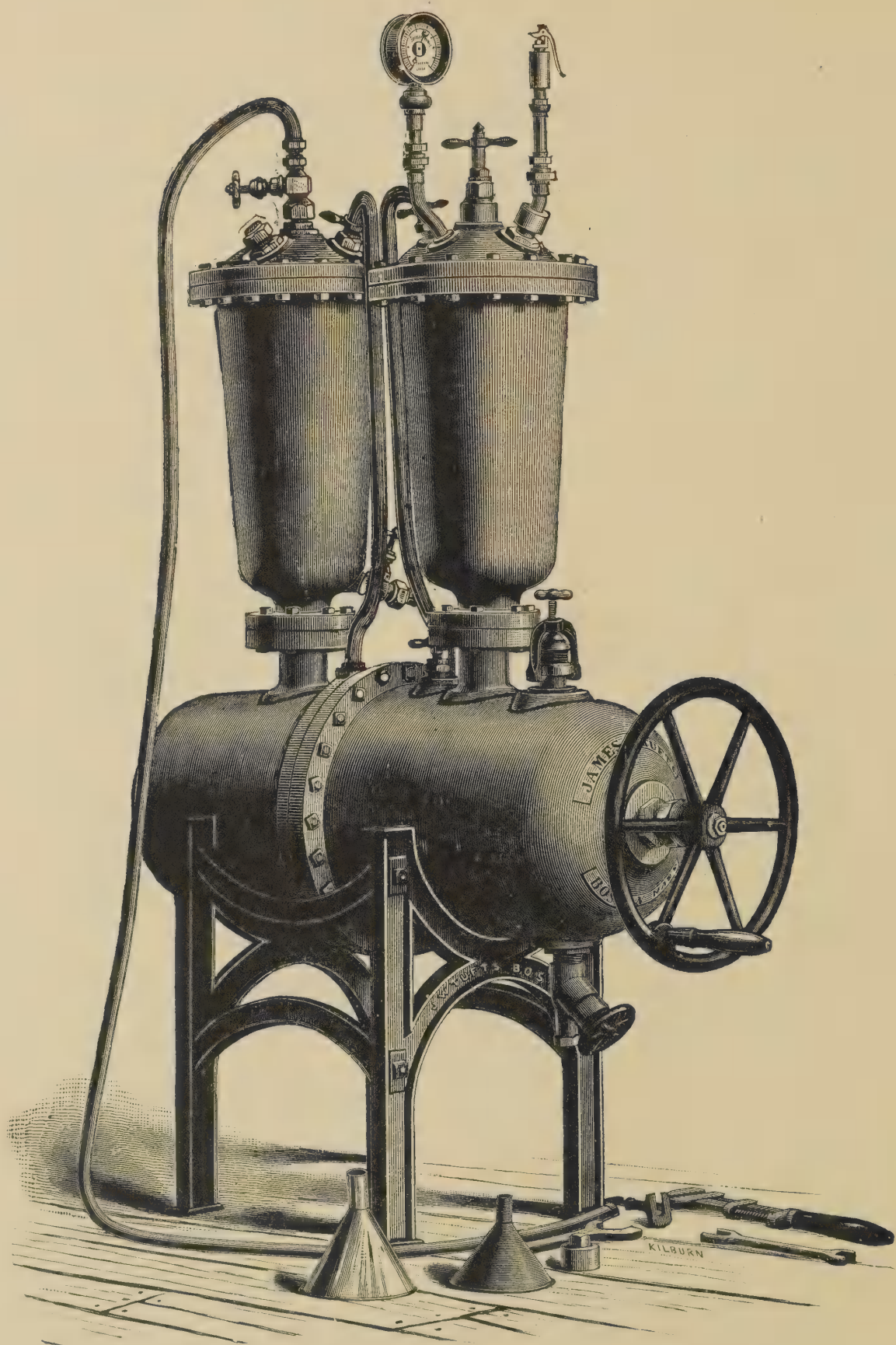
Close the vitriol-valve, by screwing down firmly. Do not use unnecessary force, as the valve and valve seat, both being of lead may be injured. The valve is closed by turning to the right, *as a screw is driven*. Do not turn the valve the wrong way and imagine it is closed when it is wide open. Place the *lead* funnel in the filling-bung and pour the prescribed quantity of sulphuric acid into the acid-chamber. The acid should always be examined, as it frequently contains pieces of glass and particles of clay from the carboy, or other hard substances, which might ruin the acid-valve seat. Tightly close the acid-chamber by screwing the cap of filling-bung on with the wrench.

Wipe the marble dust from the top of filling-bung and close tightly by means of cap and clamp; or if screw cap is used, carefully wipe marble dust from the screw thread of filling-bung, and screw the cap tightly on with the wrench.

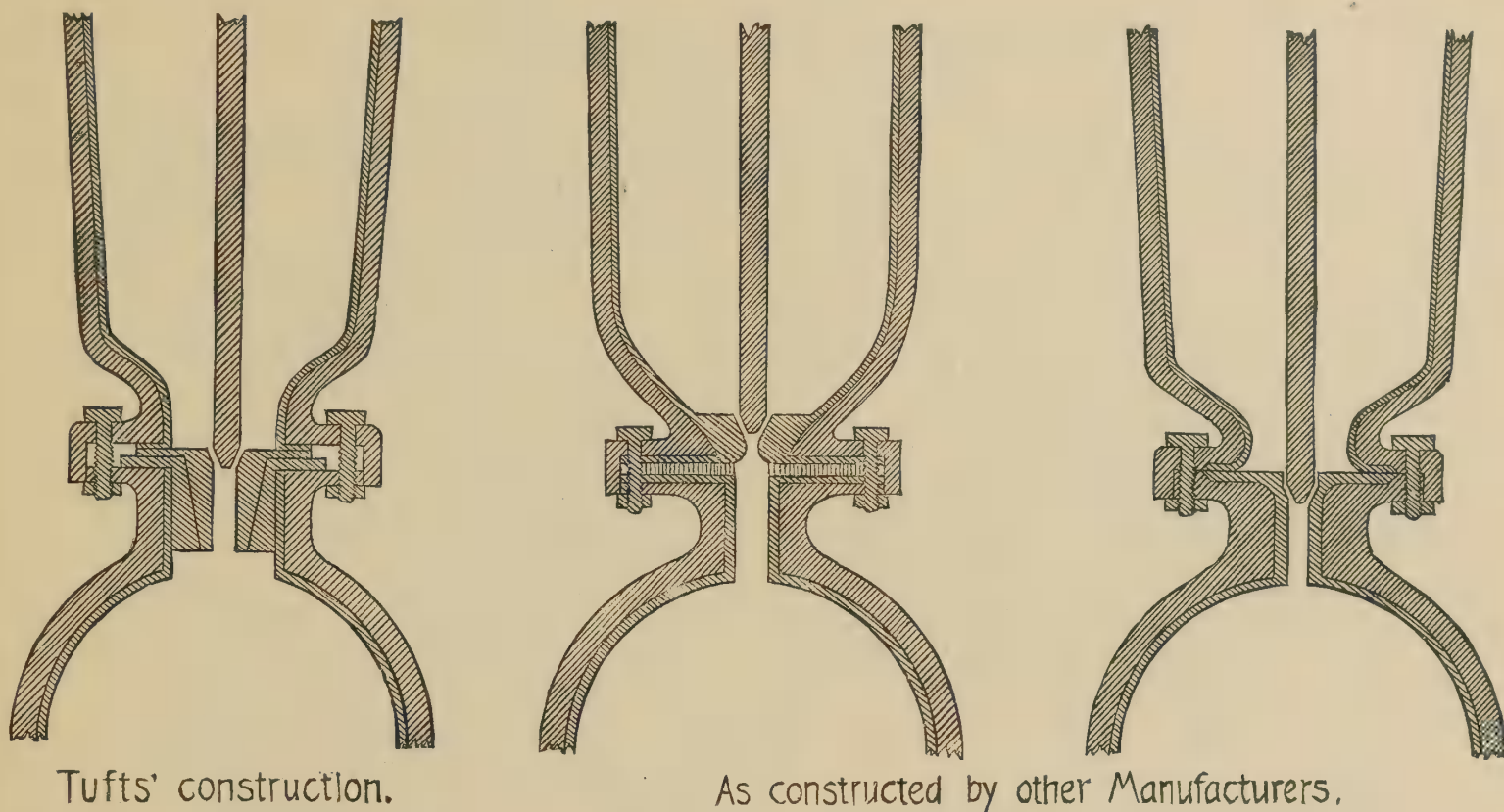
Do not close the filling-bung of the marble-chamber until the vitriol has been placed in the vitriol-chamber.

See that all the cocks and connections are tight, so that no gas can escape while generating.

Try the safety-valve and see that it works freely, which can be ascertained by brushing the fingers sharply down the projecting lever, causing the lever handle to fly back instantly. The generator is now ready for operation.



GENERATOR, WITH TOP PURIFIER.



LEAKAGE IN GENERATOR ACID-VALVE.

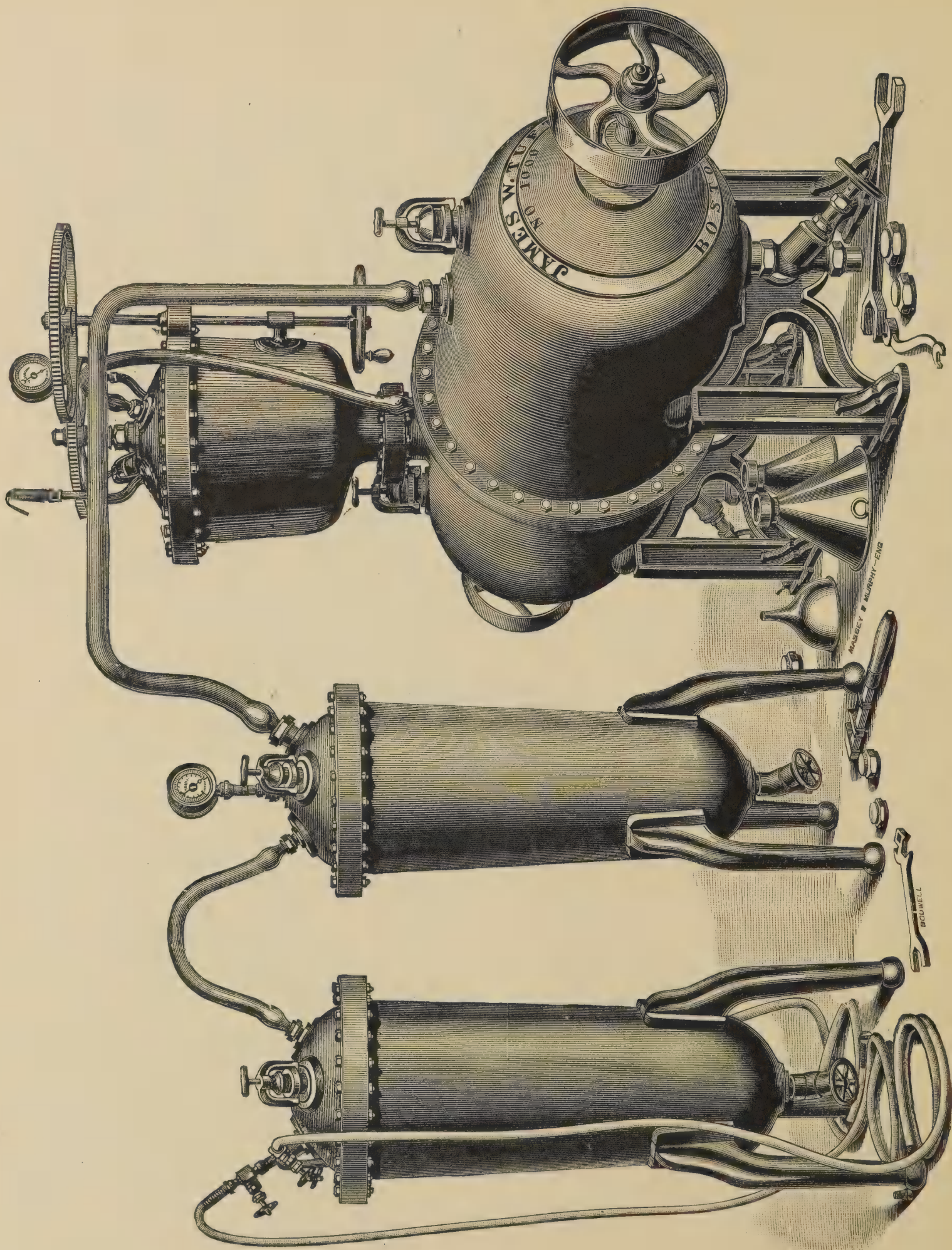
THE acid-valve and its seat are always made of lead, as that metal is not acted upon by sulphuric acid, and they are consequently liable to injury from pieces of glass and other hard substances sometimes found in the acid.

To remedy the leak thus caused remove the acid-valve entirely from the generator, and smooth the end of it by filing or scraping with a knife. If this does not stop the leak, remove the vitriol pot from the marble-chamber, first taking out the bolts which hold them together, and scrape the valve seat smooth.

If the seat is so badly cut that it cannot be easily repaired, it can be pried out with a chisel, entirely removed, and replaced with another.

The valve seat is simply a heavy, funnel-shaped, lead washer, and a new one will cost from one to two dollars.

It will be seen upon examining the above illustrations, that acid-valve seats of generators not made by me are not removable; and in case of serious injury, either the acid-chamber or the marble-chamber, according to the construction of the generator, will have to be sent to the factory for repairs.



THE JUMBO, WITH DETACHED PURIFIERS.

The Collapsing of Linings in Bottling Apparatus.

COLLAPSING is liable to occur whenever by the formation of a partial vacuum the pressure in a generator or cylinder falls below the atmospheric pressure.

Collapsing is liable to be caused: —

First. By drawing off the contents of generator or cylinders, *without pressure*, through the lower bung or cock without opening the upper bung as a vent.

Second. By tightly closing a generator or cylinder, *without pressure*, whether partially full of water, or containing only gas or air, when the temperature is falling.

To prevent collapsing: —

First. Always remove cap from upper bung before opening the lower bung or cock, when discharging either generator or cylinder, except under pressure.

Second. Never leave a generator or cylinder with bungs tightly closed, except when under pressure.

To replace a collapsed lining: —

Put in a heavy charge of gas, say 200 pounds, and allow it to stand several hours. Or, with a force-pump, pump in water to 200 pounds pressure and allow it to remain several hours.

The linings of my bottling apparatus are made unusually heavy, in order to lessen the liability to collapsion.

Speed Required for Running Agitators of Bottling Apparatus by Power.

Generators	25 revolutions per minute
Cylinders	50 to 60 “ “ “

The Cylinders.

THE cylinders should first be carefully cleaned by rinsing with clean water.

Three fourths the entire capacity is the quantity of water recommended to be used in charging. Many bottlers use a larger proportion. There is no objection to so doing, except that more agitation is necessary.

Agitate the water and gas in the cylinders thoroughly.

The use of at least two cylinders is strongly recommended, as much gas is saved by equalizing after the water in the first is exhausted, and before the second is charged.

The use of three cylinders enables the bottler to equalize a second time, if both the second and third cylinders are empty, and thus still further economize

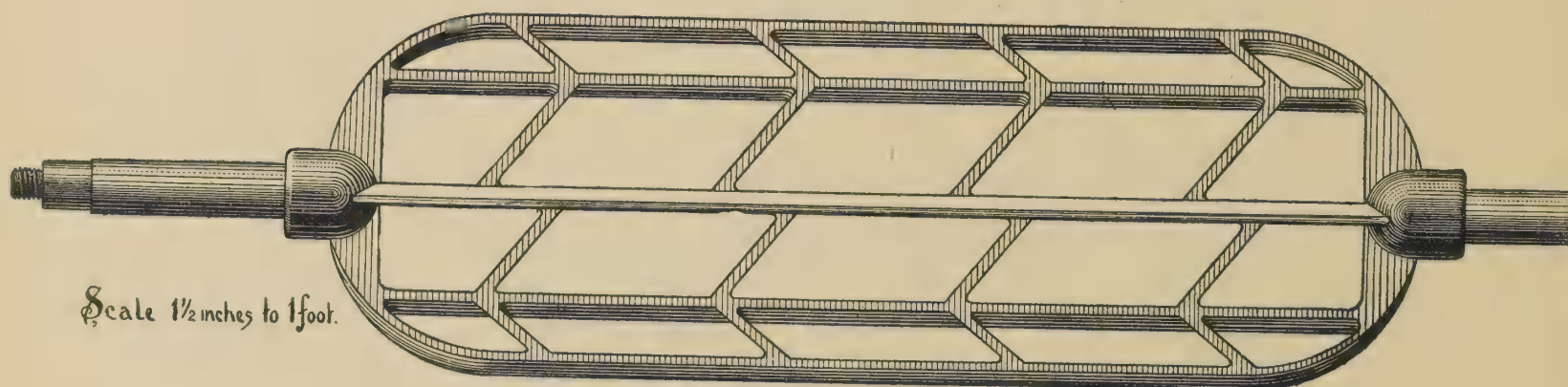
gas; or if the second fountain is in use when the first becomes empty, the third cylinder makes it possible to equalize, where, without it, all the gas in the first cylinder must be wasted.

A third cylinder will pay for itself in one season.

The use of a pump effects a still greater saving of gas, as by its use water may be forced into the cylinder without blowing off any gas.

Filling the Cylinders.

THE cylinders should be thoroughly cleaned by filling with water through the filling-bungs. Agitate by turning the agitator wheel, and empty through the discharge-bungs below. When emptying a cylinder, always remove the cap from the filling-bung. Having returned the caps to the discharge-bungs and tightly closed them with the wrench, fill each cylinder three-fourths full of pure water, the colder the better, and close tightly by means of cap and clamp or screw-cap and wrench. The cylinders are now ready to be charged.



Cylinder Agitator.

THIS agitator is composed entirely of hardened block-tin, and is cast in one piece.

It contains neither iron, copper, brass, lead, nor solder, and cannot cause the slightest contamination in the most sensitive mineral-water.

TO OPERATE THE GLENDALE OR THE STAFFORD.

THE following directions are for apparatus having one generator and three cylinders, as shown in illustrations of Glendale and Stafford. These apparatus are, however, frequently made with two and even with one cylinder; but as the method of operating remains practically the same, the bottler will find no difficulty in learning from these directions how to use them.

Set up the apparatus as shown in the illustrations, following the directions given on page 122.

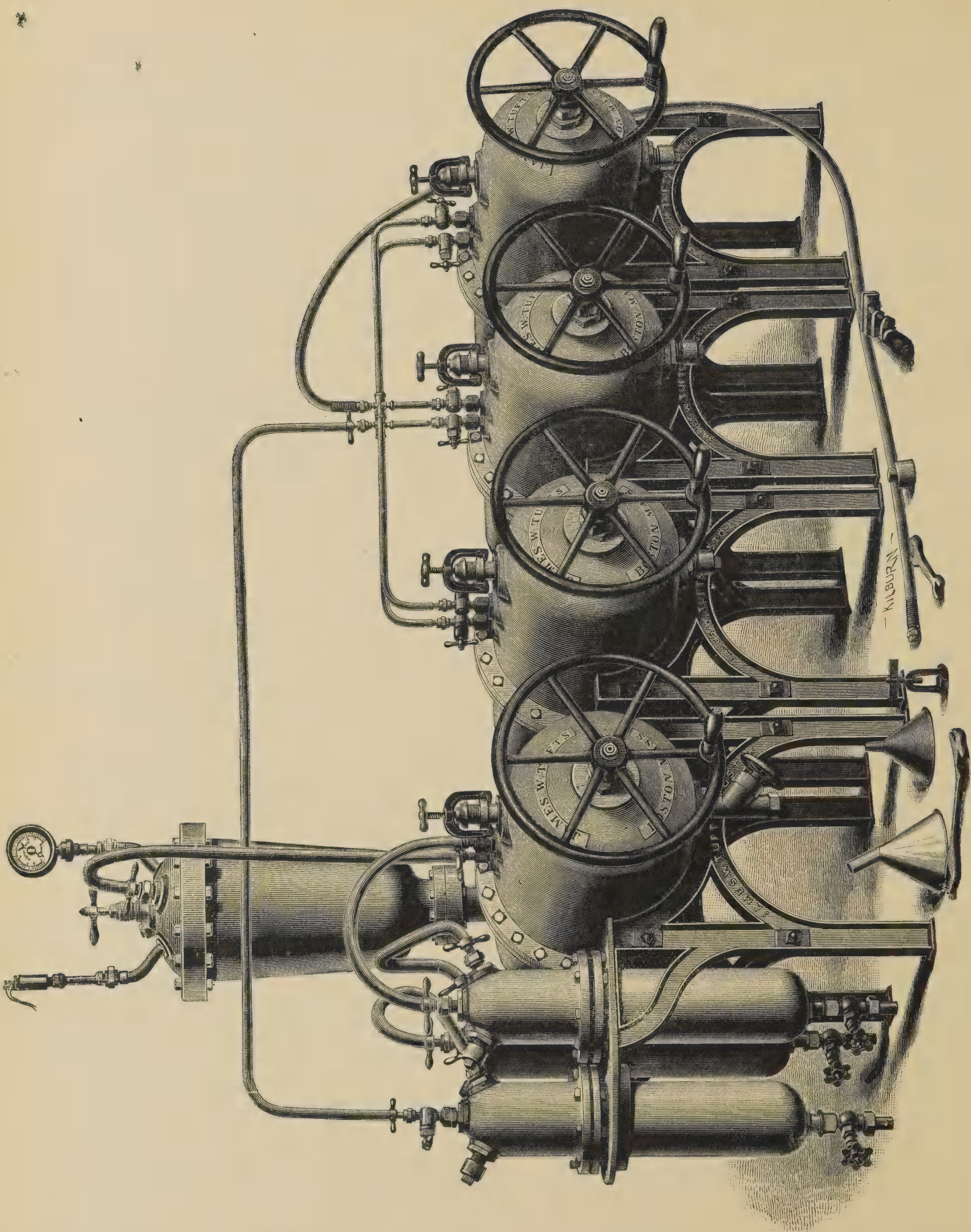
Having charged the generator and filled the cylinders as directed, on pages 131 and 136, and securely closed all valves, bungs, and connections, proceed to charge the water in the first cylinder.

Open the purifier-cock and the inlet-cock on the first cylinder. Give the vitriol-valve on the generator one-half turn to the left; let it remain in that position from twelve to fifteen seconds, or until the pressure-gauge indicates about 10 pounds, then close it firmly, but not with too much force. Turn the agitator slowly until the indicator-hand of pressure-gauge remains at a fixed point, which shows that the amount of vitriol let down has been exhausted and made all the gas it is capable of. If the desired pressure (40 to 60 pounds for bottling) has not been obtained, a little more acid should be let down and the operation repeated.

The cylinder agitator should now be turned briskly; this will cause the water to absorb the gas and lessen the pressure in the generator. More gas must now be generated by repeating the operation of letting down acid and agitating the contents of the generator.

When the water in the cylinder has been thoroughly agitated and will absorb no more gas, and the pressure-gauge indicates the desired pressure, the water in the cylinder is charged. The inlet-cock should now be closed, and the outlet-cock opened to allow the charged water to pass to the bottling-table. Bottling may now be commenced, and as the water is drawn off from the cylinder, the pressure should be maintained by occasionally allowing more gas to pass from the generator into the cylinder.

When the water is exhausted from the first cylinder, the second cylinder should be partially charged by opening its outlet-cock and allowing the gas from the first cylinder to pass over into the second cylinder, first closing the outlet-cock of the third cylinder. Agitate the water in the second cylinder briskly for ten minutes, to enable the water to absorb as much as possible of the gas in the first cylinder. Close the outlet-cock of the second cylinder and open the outlet-cock of the third cylinder to allow gas to pass from the first to the third



THE GLENDALE.

cylinder, partly charging its contents; and reduce the pressure in the first cylinder to the lowest possible degree, by agitating the contents of the third cylinder briskly for ten minutes.

Then close the outlet-cocks of both the first and third cylinders and open the inlet-cock of the second cylinder, to allow the gas to pass over from the generator and complete the charging of the water, which should of course be briskly agitated meanwhile. The water from the second cylinder can now be used to supply the bottling-table.

When the water in the second cylinder is exhausted, equalize the gas into the third cylinder, and subsequently into the first cylinder; thus saving the greatest possible amount.

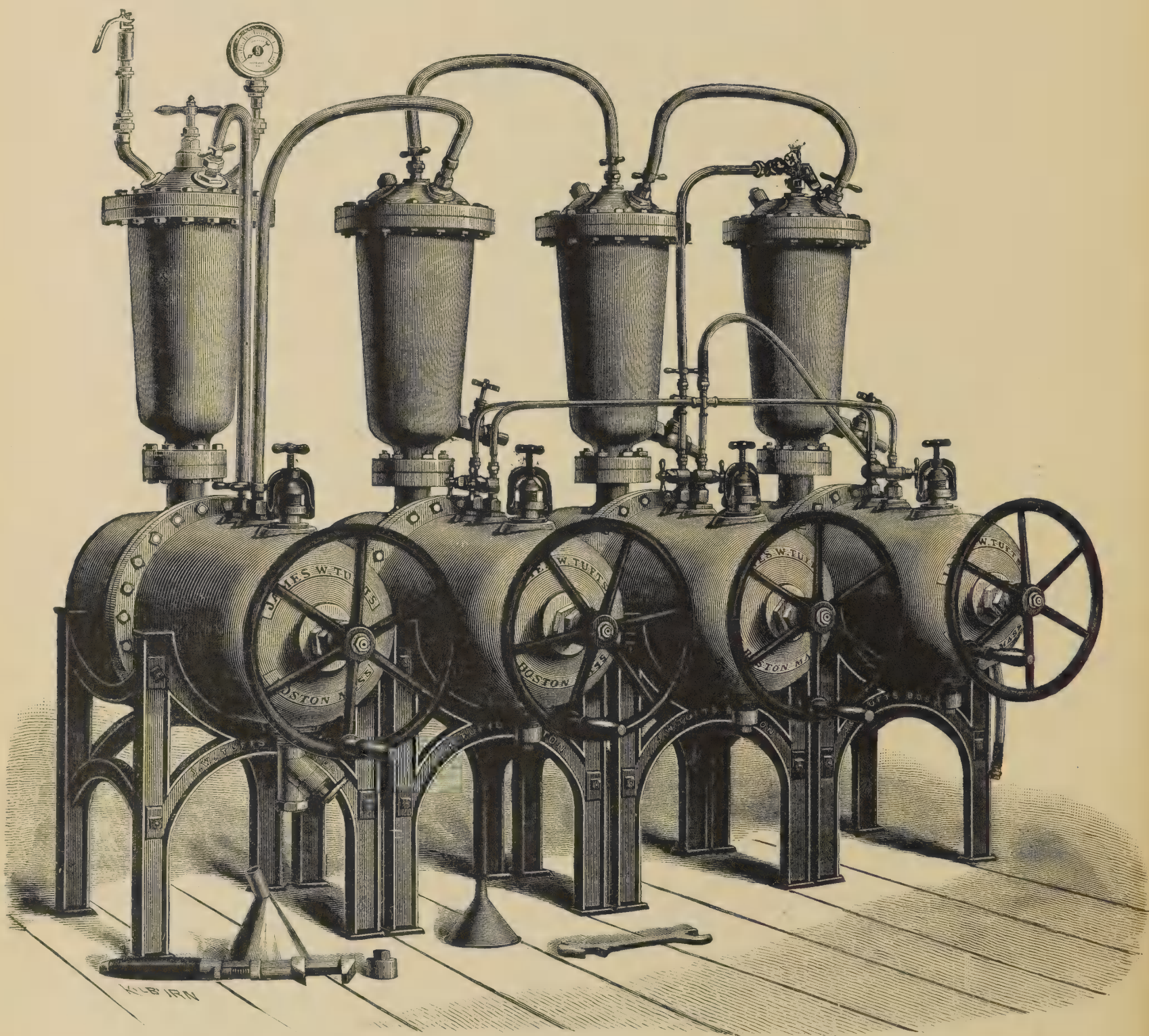
To charge the first cylinder the second time, cautiously start the clamp on filling-bung, and allow the gas to escape. When the gas has escaped, remove the clamp and cap and fill the cylinder two-thirds full of water. When the water in the third cylinder is exhausted, equalize the gas into the first and second cylinders and proceed as directed for the second cylinder. Continue to repeat these operations until the contents of the generator is exhausted, equalizing the gas from the empty cylinder, into the other two, each time, so as to save as much as possible.

When the charge in the generator is exhausted, fill the empty cylinders two-thirds full of water, and allow the gas remaining in the generator to pass into them, reducing the pressure as much as possible, by agitating the water. Close the purifier-cock, and start the clamp on the generator filling-bung, allowing the gas to escape slowly until the pressure is reduced to ten or fifteen pounds. Open the blow-off cock gradually and allow the spent charge to escape, turning the agitator constantly meanwhile. Never blow off the generator suddenly as there is danger of collapsing the lining. When the gauge indicates that the pressure is gone, and while the exhausted charge is escaping, remove the cap from the filling-bung and pour water into the generator body, turning the agitator constantly to facilitate cleaning the generator.

The acid-chamber should be thoroughly cleaned by filling with water through the filling-bung, and discharging into the generator body by opening the vitriol-valve.

The generator should be *thoroughly* cleaned after each charge, as material allowed to remain will become hard and difficult to remove, and if allowed to accumulate will eventually interfere with working the generator.

When the charge is blown off, the contents of the purifiers will generally be discharged by siphoning over into the generator body; but in all cases the purifier blow-off cocks should be opened, and whatever remains discharged, and the purifiers refilled before recharging.



THE STAFFORD.

TO OPERATE THE POLAND.

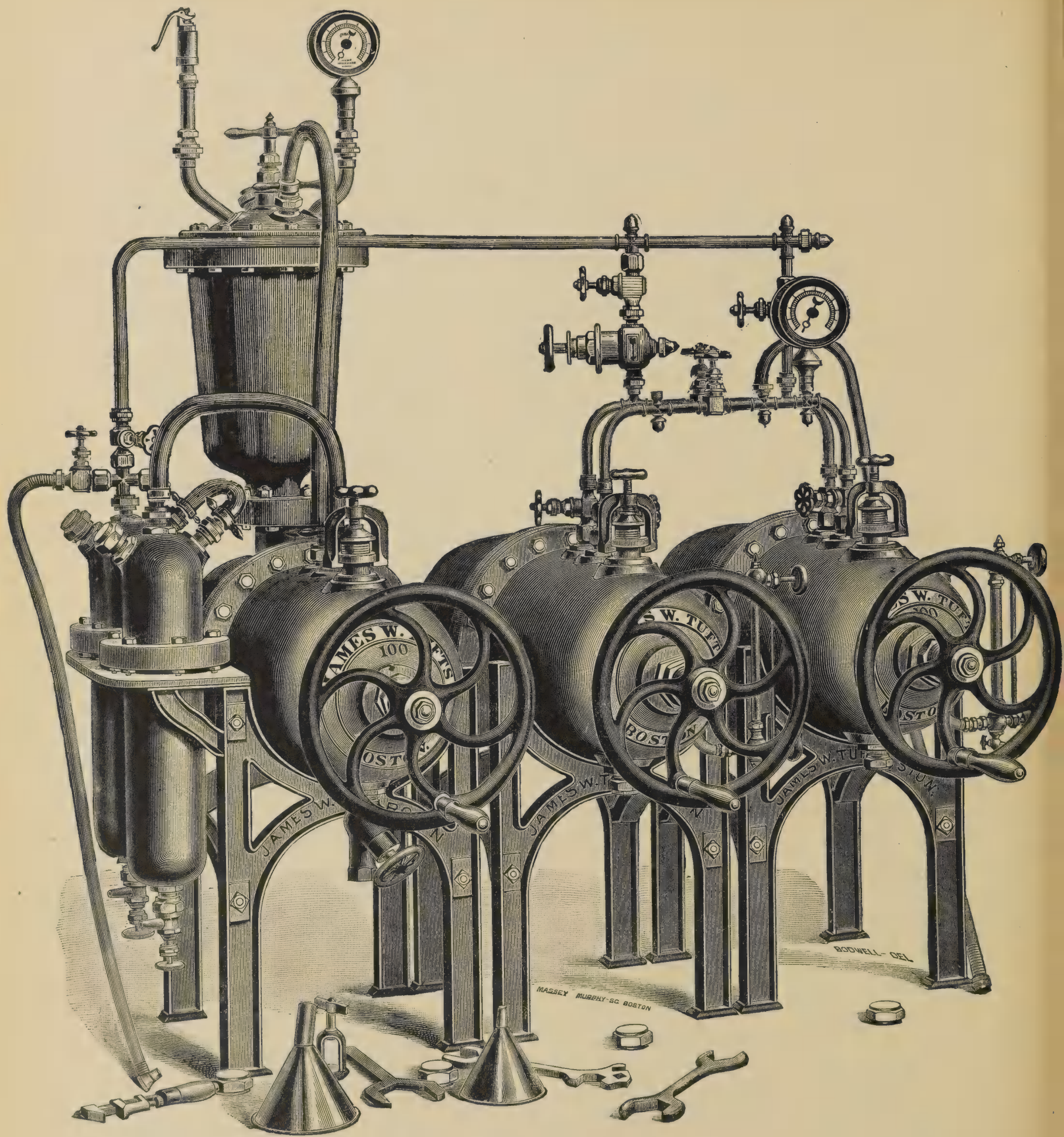
THE following directions are for an apparatus having one generator and two cylinders as shown in the illustration. This apparatus is, however, frequently made with three cylinders, and sometimes with one cylinder; but as the method of operating is practically the same, the bottler will readily learn from these directions how to use either.

Set up the apparatus as shown in the illustration, following the directions given on page 122, and connect with the bottling-table by means of the rubber charging-pipe, sent with the apparatus, which should be attached to the nipple on the front bow-pipe directly in front of the regulating-valve. Having charged the generator and filled the cylinders as directed on pages 131 and 136, and securely closed all valves, bungs, and connections, proceed to charge the water in the first cylinder.

Open the cocks of the first cylinder and the cocks on the bow-pipes between the two cylinders; close the regulating-valve by turning back the top handle until all pressure is removed from the springs; also close the cock in the high-pressure upright pipe, above the bow-pipe, the cocks of the second cylinder, and the water-valve of the syrup-pump at the bottling-table.

Close the nipple nearest the pressure-gauge on the front bow-pipe, by means of the small cap sent for the purpose, or attach by means of a charging-pipe to a second bottling-table or a siphon-filler.

Give the vitriol-valve of the generator one-half turn to the left, let it remain in that position from twelve to fifteen seconds, or until the pressure-gauge indicates about ten pounds; then close it firmly, but not with too much force, and turn the agitator slowly until the indicator-hand of the pressure-gauge remains at a fixed point, which shows that the amount of vitriol let down has been exhausted and made all the gas it is capable of. Let down more acid and repeat the foregoing operation until the gauge on the generator indicates one hundred and fifty pounds pressure. Open the purifier-cock and the cock above the regulating-valve and set the regulating-valve by turning down the handle very slowly, turning the cylinder agitator briskly meanwhile, until the gauge on the bow-pipe indicates the desired bottling pressure, forty to sixty pounds. Continue to agitate the water and gas in the cylinder until gas ceases to pass over from the generator. The passage of gas may be known by the clicking of the regulating-valve as it automatically opens and closes. When the passage of gas ceases, the cylinder is charged at the pressure to which the regulating-valve has previously been set; unless the pressure in the generator has fallen below the desired pressure, in which case it will be necessary to let down more acid and agitate the contents of the generator until the pressure rises again to one hundred and fifty pounds. This operation must be repeated as often as pressure in the generator becomes low.



THE POLAND.

Bottling should now be commenced. As the water is drawn off from the cylinder the pressure will be maintained by the automatic action of the regulating-valve.

When the water is exhausted from the first cylinder, the water in the second cylinder should be charged. Close the cock above the regulating-valve, and open the cocks of the second cylinder to allow the gas remaining in the first cylinder to pass over and partly charge the water in the second cylinder.

Agitate the contents of the second cylinder until the hand of the pressure-gauge on the bow-pipe ceases to fall back. When this occurs the water in the second cylinder has absorbed as much of the gas from the first cylinder as it is capable of taking.

Close the cocks of the first cylinder, and open the cock in the high-pressure pipe. Gas will now pass from the generator into the second cylinder, and the agitator of the second cylinder should be turned briskly until the gauge on the cylinders indicates the desired pressure; the high-pressure cock can then be closed, and the regulating-valve will maintain the pressure as before.

The regulating-valve is not intended to be a perfectly gas-tight valve, and gas will leak slowly through it; therefore when bottling is suspended the cock above the regulating-valve should always be closed. If, however, the cock should be left open and gas should leak through the regulating-valve until both gauges register the same pressure, it is only necessary to waste off some gas at the filling-bung of the charged cylinder before resuming bottling. If the contents of the cylinder have not been agitated during or subsequent to the leakage, bottling can be resumed without blowing off gas.

The water in the second cylinder having been charged, bottling may now be resumed.

Much of the gas still remaining in the first cylinder can be saved by partially charging portable fountains, if any are available for the purpose, and the remainder should be blown off, by cautiously loosening the clamp or nut (whichever is used), of the filling-bung, and the cylinder prepared for recharging by refilling it two-thirds full of water. The height of water in the cylinders can readily be seen if the cocks of the water-gauges are open. When the contents of the second cylinder has been exhausted, the gas remaining in it should be saved, as far as possible, by equalizing into the first cylinder, repeating the operation already described, and these operations should be repeated until the charge in the generator is exhausted.

When siphon-bottles are to be filled the bow-pipe cocks should be closed to separate the two cylinders, and the cock in the upright pipe in the rear of the pressure-gauge and the inlet-cock of the second cylinder both opened, to allow the high pressure from the generator to pass into the second cylinder.

The contents of the second cylinder should be thoroughly agitated until the pressure-gauge of the generator remains fixed at one hundred and fifty pounds.

In order to maintain a uniform pressure in the siphons, it is necessary that the pressure in the generator be maintained at one hundred and fifty pounds during filling. If desired, a regulating-valve for high pressure can be inserted in the upright pipe behind the pressure-gauge; which will maintain a uniform pressure in all siphons filled, provided the pressure in the generator is maintained at a point higher than that at which this regulating-valve is set.

Bottles, siphons, and portable fountains may all be filled from this apparatus at the same time if necessary.

If the apparatus is supplied with three cylinders instead of two, less gas will be wasted; as, if siphons are not being charged, the cylinder from which the water is exhausted can first be equalized into one cylinder, thereby reducing the pressure remaining in it more than one half, and subsequently into the other, reducing the pressure to about one fourth of that originally remaining in the exhausted cylinder after all the water has been drawn off. Or if siphon-bottles are being charged, the exhausted cylinder can be equalized once, whereas with but two cylinders it would not be possible to equalize at all, and all the gas remaining after the water has been exhausted must be blown off and wasted.

When a force-pump is used to inject water into the cylinders against the pressure, all the gas is saved, as it becomes unnecessary to open the cylinders for refilling, and consequently no gas is blown off.

When the charge in the generator is exhausted, fill the empty cylinder two-thirds full of water, and allow the gas remaining in the generator to pass into it by opening the cock in the vertical high-pressure pipe, and reduce the pressure as much as possible by agitating the water.

Close the purifier-cock and start the cap on the generator filling-bung, and allow the gas to escape slowly until the pressure-gauge indicates ten to fifteen pounds. Open the blow-off cock gradually and allow the exhausted material to escape, turning the agitator constantly meanwhile. Never blow off the generator suddenly, as there is danger of collapsing the lining. When the gauge indicates that the pressure is gone, and while the exhausted charge is escaping, remove the cap from the filling-bung and pour water into the generator body, turning the agitator constantly to facilitate cleaning the generator.

The acid-chamber should be thoroughly cleaned by pouring water through the filling-bung, and discharging into the generator body by opening the vitriol-valve. The generator should be *thoroughly* cleaned after each charge, as material allowed to remain will become hard and difficult to remove, and if allowed to accumulate will eventually interfere with working the generator.

The contents of the purifiers will generally be discharged by siphoning over into the generator body when the charge is blown off; but in all cases the purifier blow-off cocks should be opened, and whatever water remains discharged, and the purifiers refilled before recharging.

TO OPERATE THE STOCKTON.

THE following directions are for an apparatus having one generator and three cylinders, as shown in the illustration. This apparatus is, however, frequently made with two and even with one cylinder; but as the method of operating remains practically the same, the bottler will find no difficulty in learning from these directions how to use either.

Set up the apparatus as shown in the illustration, and connect with the bottling-table by means of the rubber charging-pipe shown, closing the other two nipples on the front bow-pipe by means of the small caps sent for the purpose, or attaching them by means of charging-pipes to a second and third bottling-table. The nipple farthest from the generator may be attached to a siphon-filler, if it is desired to fill siphons.

Having charged the generator and filled the cylinders, as directed on pages 131 to 136, and securely closed all valves, bungs, and connections, proceed to charge the water in the first cylinder.

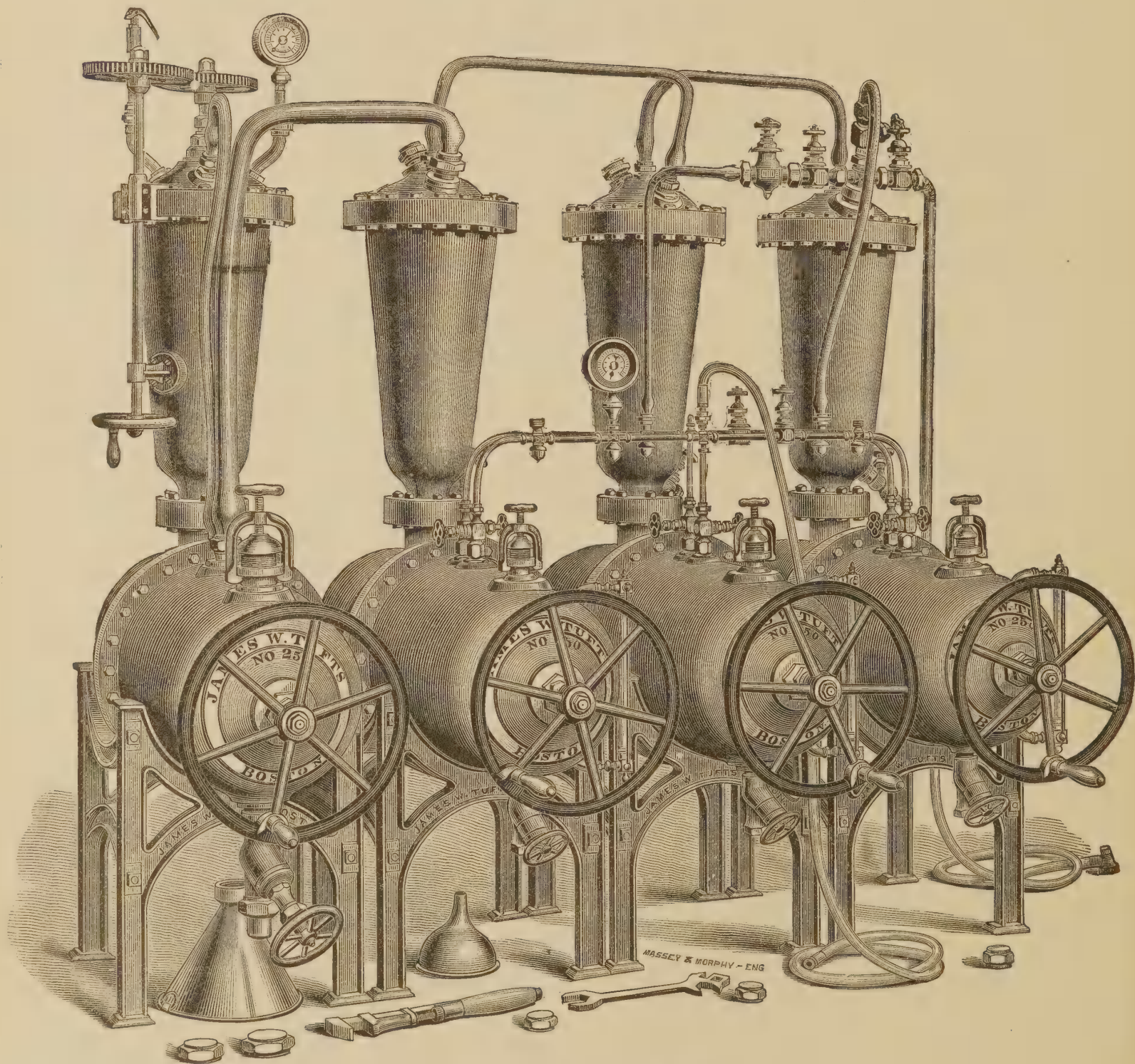
(The cocks shown below the cylinders in the illustration are only necessary when a pump for forcing water against pressure is used, and are not furnished, caps being sent in their stead.)

Open the cocks of the first cylinder, and the cocks on the bow-pipes, and close the regulating-valve by turning back the top handle until all pressure is removed from the springs under it; also close the purifier-cock of the high-pressure pipe, the cocks of the second and third cylinders, and the water-valve of the syrup-pump at the bottling-table.

Open the acid-valve, by grasping the hand-wheel of the valve gear with both hands, and giving it one-half turn, carrying the right hand toward you, and allow it to remain in that position from twelve to fifteen seconds, or until the pressure-gauge indicates about ten pounds, then close it firmly, but not with too much force, and turn the agitator slowly until the indicator-hand of the pressure-gauge remains at a fixed point, which shows that the amount of vitriol let down has been exhausted and made all the gas it is capable of. Let down more acid and repeat the foregoing operation until the generator gauge indicates one hundred and fifty pounds pressure.

Open the cock between the purifier and the regulating-valve, and set the regulating-valve by turning down the handle very slowly, turning the cylinder agitator briskly meanwhile, until the gauge on the bow-pipe indicates the desired bottling pressure, forty to sixty pounds.

Continue to agitate the water and gas in the cylinder until gas ceases to pass over from the generator. The passage of gas may be known by the click-



THE STOCKTON.

ing of the regulating-valve, as it automatically opens and closes. When the passage of gas ceases the cylinder has been charged at the pressure to which the regulating-valve has previously been set; unless the pressure in the generator has fallen below the desired pressure, in which case it will be necessary to let down more acid and agitate the contents of the generator until the pressure rises again to 150 pounds. This operation must be repeated as often as the pressure in the generator becomes low.

Bottling should now be commenced. As the water is drawn off from the cylinder, the pressure will be maintained by the automatic action of the regulating-valve.

When the water is exhausted from the first cylinder, the water in the second cylinder should be charged. Close the cock between the purifier and the regulating-valve and open the cocks of the second cylinder, to allow the gas remaining in the first cylinder to pass over and partly charge the water in the second cylinder.

Agitate the contents of the second cylinder until the hand of the pressure-gauge on the bow-pipe ceases to fall back. When this occurs the water in the second cylinder has absorbed as much of the gas from the first cylinder as it is capable of taking.

Close the cocks of the first cylinder, and open the cock in the high-pressure pipe. Gas will now pass from the generator into the second cylinder, and the agitator of this cylinder should be turned briskly until the gauge on the cylinders indicates the desired pressure; the high-pressure cock can then be closed, and the cock between the purifier and regulating-valve opened, and the regulating-valve will maintain the pressure as before.

The regulating-valve is not intended to be a perfectly gas-tight valve, and gas will leak slowly through it; therefore when bottling is suspended the cock between the purifier and the regulating-valve should always be closed. If, however, the cock should be left open and gas should leak through the regulating-valve until both gauges register the same pressure, it is only necessary to waste off some gas at the filling-bung of the charged cylinder before resuming bottling. If the contents of the cylinder have not been agitated during or subsequent to the leakage, bottling can be resumed without blowing off gas.

The water in the second cylinder having been charged, bottling may now be resumed.

When all the water in the second cylinder has been used, the water in the third cylinder should be charged.

Close the cocks of the second cylinder and the regulating-valve purifier-cock, and open the cocks of the first and third cylinders, to allow the gas remaining in the first cylinder to pass over and partly charge the water in the third cylinder. Agitate the contents of the third cylinder until the hand of the gauge on the bow-pipe ceases to fall back; then close the cocks of the first cyl-

inder and open the cocks of the second cylinder, to allow the gas remaining in this cylinder to pass into the third cylinder, and again agitate the contents of the third cylinder until the hand of the bow-pipe gauge ceases to fall back. Close the cocks of the second cylinder and open the cock in the high-pressure pipe, allowing gas to pass over from the generator until the gauge on the cylinders indicates the desired pressure, showing that the water in the third cylinder has been completely charged. The high-pressure cock should then be closed, and the cock between the regulating-valve and the purifier opened, to allow the regulating-valve to maintain the pressure as before.

Bottling may now be again resumed. When the water in the third cylinder has been exhausted, the first cylinder should be recharged. Cautiously loosen the clamp or nut of the filling-bung and allow the gas to escape. Then remove the cap, and refill the cylinder two-thirds full of water. The height of water in the cylinders can readily be seen if the cocks of the water-gauges are open. Replace the cap, and save the gas remaining in the second and third cylinders by equalizing first the second cylinder and then the third cylinder, as directed in charging the third cylinder.

Repeat the foregoing operations until the charge in the generator is exhausted; equalizing each time in order to utilize as much of the gas as possible. If siphons are to be filled while bottling is being done, equalizing can only take place between the first and second cylinders.

When siphon-bottles are to be filled, the bow-pipe cocks should be closed, to separate the third cylinder from the others, and the purifier-cock of the high-pressure pipe and the inlet-cock of the third cylinder opened, to allow the high pressure from the generator to pass into the third cylinder.

The contents of the third cylinder should be thoroughly agitated with the pressure-gauge of the generator registering 150 pounds.

In order to maintain a uniform pressure in the siphons, it is necessary that the pressure in the generator be maintained at 150 pounds during filling.

If desired, a regulating-valve for high pressure can be inserted in the high-pressure pipe, which will maintain a uniform pressure in all siphons filled, provided the pressure in the generator is maintained at a point higher than that at which the regulating-valve is set.

Bottles, siphons, and portable fountains may all be filled at the same time, if desired.

When a force-pump is used to inject water into the cylinders against the pressure, all the gas is saved and equalization becomes unnecessary, as the cylinders are not opened for refilling.

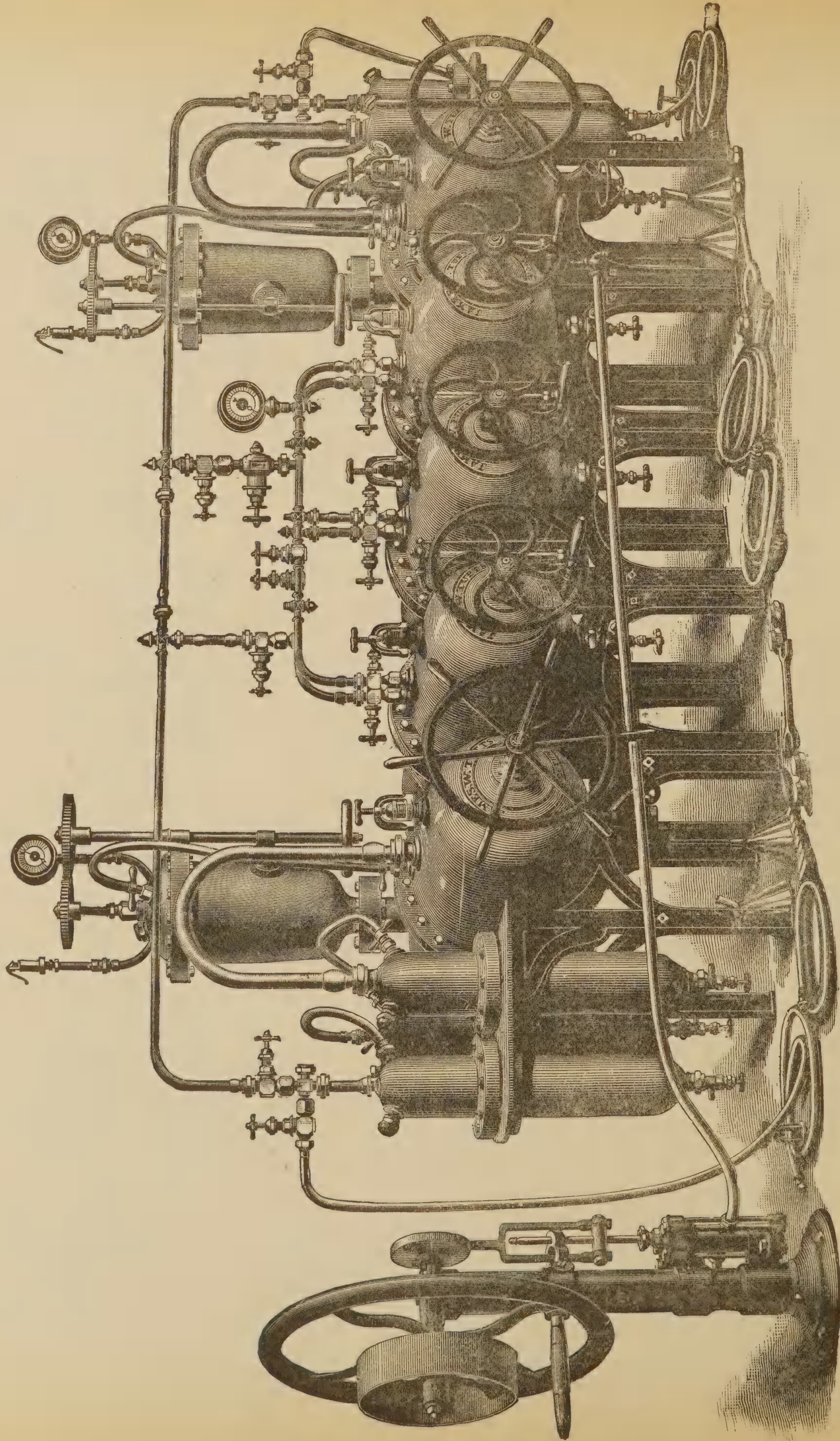
When the charge in the generator is exhausted, fill the empty cylinders two-thirds full of water and allow the gas remaining in the generator to pass into them, through the high-pressure pipe and reduce the pressure as much as possible by agitating the contents of the cylinders.

Close the purifier-cocks, and allow the gas to escape slowly from the generator, by starting the clamp or cap of the filling-bung, until the pressure-gauge indicates 10 to 15 pounds. Open the blow-off cock, underneath the generator, gradually, and allow the spent charge to escape, turning the agitator constantly. Never blow off the generator suddenly, as there is danger of collapsing the lining.

When the gauge indicates that all the pressure is gone, and while the exhausted charge is escaping, remove the cap from the filling-bung, and pour water into the generator body, turning the agitator constantly, to facilitate cleaning the generator. When there is a pressure of water, it is well to use a hose with a small, bent nozzle, which can be inserted at the filling-bung, and will throw the water into every part of the generator body. The generator should be *thoroughly* cleaned after each charge, as material allowed to remain will become hard and difficult to remove, and, if allowed to accumulate, will eventually interfere with working the generator.

▪ The acid-chamber should be thoroughly cleaned by pouring water through the filling-bung, and discharging into the generator body, by opening the vitriol-valve.

The contents of the purifiers will generally be discharged by siphoning over into the generator body when the charge is blown off; but in all cases the purifier blow-off cocks should be opened, and whatever water remains discharged, and the purifiers refilled before the new charge is put into the generator.



THE SPA.

TO OPERATE THE SPA.

SET up the apparatus as shown in the illustration. Having securely closed all valves, bungs, and connections, and connected the inlet-pipe of pump with the water supply, remove the clamps and caps from the filling-bungs of cylinders; open the water gauge-cocks and the cocks below the cylinders; start the pump, and thoroughly clean the cylinders by pumping them full of water and drawing it off by means of the cock at end of water supply-pipe.

After drawing off the water, close the cock at the end of water supply-pipe and pump the cylinders *full* of water, and replace the caps and clamps on the filling-bungs, closing them securely.

Connect the cylinders with the bottling-tables and siphon-filler, by means of the rubber charging-pipes, which should be screwed to the nipples on the front bow-pipe.

Charge the first generator and fill the purifiers as directed, on pages 131 and 134, and proceed to charge the water in the cylinders the first time. Close the regulating-valve by turning back the handle until all pressure is removed from the springs.

Close the cocks in the high and low pressure pipes (the vertical pipes connecting the main gas-pipe with the bow-pipe), the purifier-cocks of the second generator, and the horizontal purifier-cock of the first generator (shown in the illustration with a rubber charging-pipe attached to it, to be used in charging portable fountains), and the cylinder outlet-cocks.

Give the vitriol-valve on the generator one-half turn to the left (if the apparatus is supplied with the acid-valve gear, shown in the illustration, grasp the hand-wheel with both hands and give it one-half turn, carrying the right hand toward you), let it remain in that position from twelve to fifteen seconds, or until the pressure-gauge indicates about 10 pounds, then close it firmly, but not with too much force. Turn the agitator slowly until the indicator-hand of the pressure-gauge remains at a fixed point, which shows that the amount of vitriol let down has been exhausted and made all the gas it is capable of. Let down more acid and repeat the operation as before, until the desired pressure (150 pounds) is obtained.

Open the gas inlet-cocks of all the cylinders, close the cock on the rear bow-pipe, and the corresponding cock on the front bow-pipe, to separate the siphon-pressure cylinder from the bottling-pressure cylinders, open the vertical purifier-cock of the first generator and set the regulating-valve by screwing in the handle very slowly, turning the cylinder agitators briskly meanwhile, until the pressure-gauge on the cylinders indicates the desired pressure (40 to 60 pounds). Before agitating, open the cock at the end of water supply-pipe, allow the water to escape until the fountains are but two-thirds full, and close

the cocks below the cylinders. This method of proceeding, that is, filling the cylinders full and allowing one third to escape while the gas is flowing in, displaces the atmospheric air.

Continue to agitate the water and gas in the cylinders until gas ceases to pass over from the generator. The passage of the gas into the two cylinders to be charged at bottling pressure may be known by the clicking of the regulating-valve, as it automatically opens and closes. The water for bottling, in the two cylinders governed by the regulating-valve, is now charged, unless the pressure in the generator has fallen below that at which the regulating-valve is set, in which case more acid should be let down and the generator agitator revolved until the gauge indicates 150 pounds. This operation must be repeated whenever the pressure in the generator becomes low.

The contents of the cylinder which is to be charged to siphon pressure should be agitated until the hand of the generator pressure-gauge ceases to fall back, and stands at 150 pounds. The water in this cylinder is then charged at the pressure indicated.

Open the outlet-cock of the first of the cylinders charged to bottling pressure and allow the charged water to pass to the bottling-tables. As the water is drawn off from the cylinders, the pressure will be maintained by the automatic action of the regulating-valve.

When the water in the first cylinder is exhausted, close the outlet-cock of the first cylinder and open the outlet-cock of the second cylinder, allowing the water from this cylinder to keep up the supply at the bottling-table.

Open the water inlet-cock of the first cylinder. Start the pump and inject water until the height of the column in the water-gauge glass shows that the cylinder is three-fourths full of water.

Always make sure that the water-gauge cocks are open when pumping water, and be careful not to fill the cylinders too full.

In recharging the first cylinder, time can be saved by charging it through the high-pressure pipe, instead of through the regulating-valve. The gauge on the cylinders will show when the desired pressure is reached; the high-pressure cock can then be closed, and the regulating-valve will maintain the pressure as before.

The third cylinder, meanwhile, can be attached to the siphon-filler and siphons can be filled until the pressure in the generator falls below 125 pounds. When this occurs, the generator agitator should be slowly revolved, and, if necessary, acid let down, and the pressure raised again to 150 pounds.

Continue the above described operations until the charge in the generator is exhausted and the pressure falls below the required point, which will be indicated by the pressure-gauges.

While the charge in the first generator is being used, the second should be charged and prepared for use.

When the charge in the first generator is exhausted, close the purifier-cock in the main gas-pipe of the first generator and open the purifier-cock in the main gas-pipe of the second generator, and allow the gas from the second generator to pass over and supply the cylinders.

While the second generator is supplying the cylinders with gas, the first generator should be cleaned out and recharged.

If any portable fountains are to be charged, the gas remaining in the first generator may be utilized by partially charging them.

Start the clamp on the generator filling-bung, allowing the gas to escape slowly until the pressure is reduced to ten or fifteen pounds. Open the blow-off cock gradually and allow the spent charge to escape, turning the agitator constantly meanwhile. Never blow off the generator suddenly as there is danger of collapsing the lining. When the pressure-gauge indicates that the pressure has all escaped, and while the exhausted charge is still escaping, remove the cap from the filling-bung, attach a hose, provided with a curved nozzle of proper size, to the cock at end of water supply-pipe, start the pump and throw the stream of water into every part of the generator body, turning the agitator constantly to facilitate cleaning.

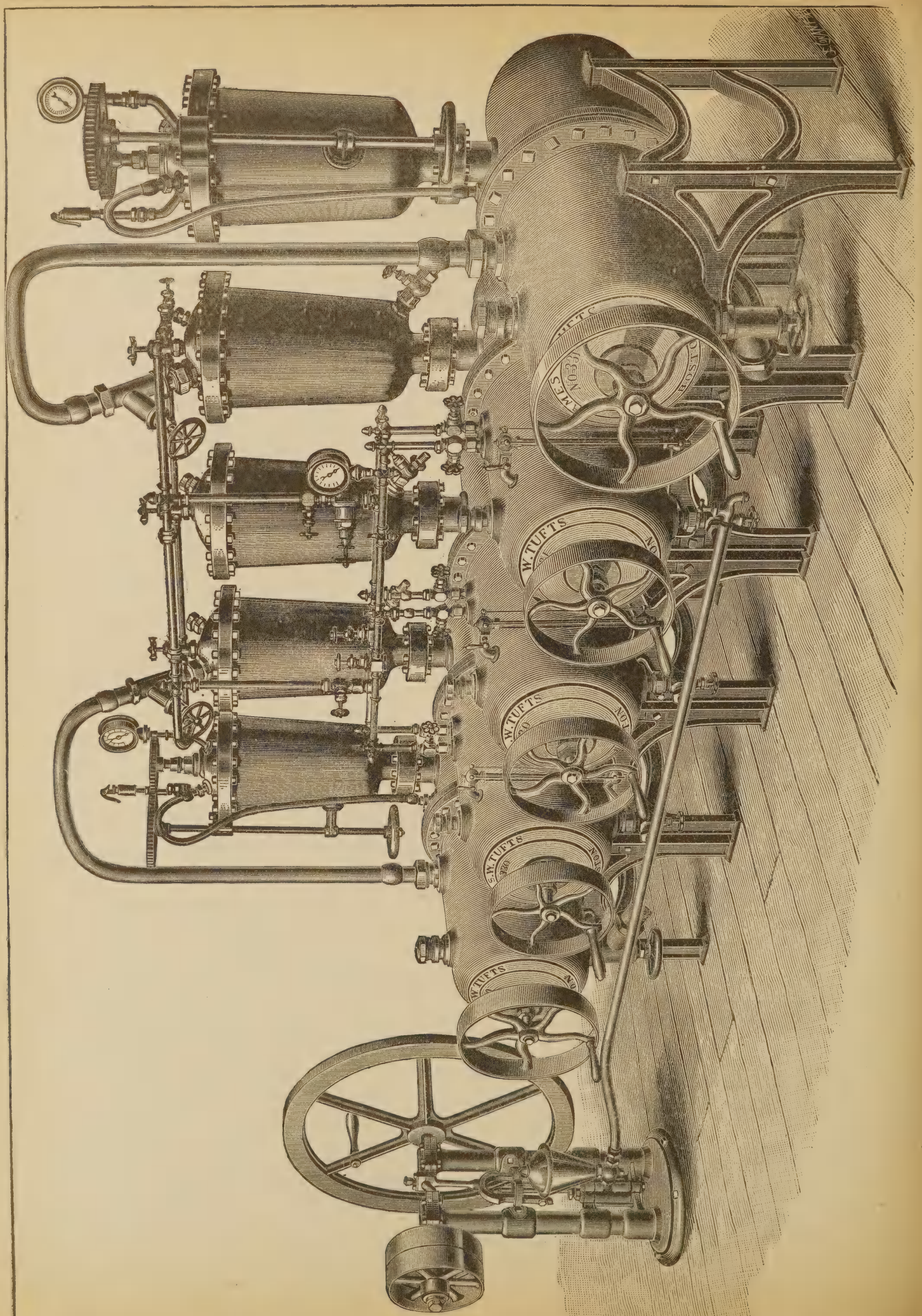
Unless the generator is to be immediately recharged, the acid-chamber should be thoroughly cleaned by filling it with water through the filling-bung and discharging into the generator body by opening the vitriol-valve. The generator should be *thoroughly* cleaned after each charge, as material allowed to remain will become hard and exceedingly difficult to remove, and if allowed to accumulate will eventually interfere with working the generator.

When the charge is blown off, the contents of the purifiers will be discharged into the generator body, being forced out by the pressure remaining in the purifier. But the purifier blow-off cocks should always be opened, and whatever remains discharged. The purifiers should be washed out with the hose, and refilled two-thirds full before recharging.

As the use of the regulating-valve allows the generators to be charged to much higher pressure than is required in the cylinders, portable fountains may be charged at any time without interfering with bottling operations.

The regulating-valve is not intended to be absolutely tight; when bottling is suspended, therefore, the cock above the regulating-valve should always be closed.

If, however, the cock should be left open, and gas should leak through the regulating-valve until both gauges register the same pressure, it is only necessary to waste off some gas at the filling-bung of one of the cylinders before resuming bottling. If the contents of the cylinder have not been agitated during or subsequent to the leakage, bottling can be resumed without blowing off gas.



THE QUELLE.

TO OPERATE THE QUELLE.

SET up the apparatus as shown in the illustration. Having securely closed all valves, bungs, and connections, and connected the inlet-pipe of pump with the water supply, remove the caps from filling-bungs of cylinders; open the water gauge-cocks and the cocks below the cylinders; start the pump, and thoroughly clean the cylinders by pumping them full of water and drawing it off by means of the cock at end of water supply-pipe.

After drawing off the water, close the cock at the end of water supply-pipe and pump the cylinders *full* of water. Replace the caps and clamps on the filling-bungs, closing them securely.

Charge the first generator and fill the purifiers as directed, on pages 131 and 136, and proceed to charge the water in the cylinders the first time. Close the regulating-valve by turning back the handle until all pressure is removed from the springs; also close the bow-pipe cocks, which separate the cylinder to be charged to siphon pressure, from the two cylinders to be charged to bottling pressure.

Close the valve in the large gas-pipe of the second generator to prevent the gas from passing into that generator. Close the two purifier-cocks, to which pipes for charging portable fountains are to be attached. Turn the two-way cock at the top of each purifier so that one of the arrows will point toward the second generator. The arrows indicate the directions in which the gas will pass through the cocks.

Connect the bottling-tables and siphon-filler with the cylinders, by means of the nipples on the front bow-pipe and the rubber charging-pipes sent for the purpose. Close the unused nipples, if any, by means of the small caps.

Give the vitriol-valve on the generator one-half turn to the left (if the generators are supplied with the acid-valve gears shown in the illustration, grasp the hand-wheel with both hands and give it one-half turn bringing the right hand toward you) let it remain in that position from twelve to fifteen seconds, or until the pressure-gauge indicates about ten pounds, then close it firmly, but not with too much force. Do not make the mistake of supposing the vitriol-valve closed when it is wide open. Turn the agitator slowly until the indicator-hand of the pressure-gauge remains at a fixed point, which shows that the amount of vitriol let down has been exhausted and made all the gas it is capable of. Let down more acid and repeat the operation as before, until the desired pressure (150 pounds) is obtained.

Open the gas inlet-cocks of all the cylinders, and set the regulating-valve by screwing in the handle very slowly, turning the cylinder agitators briskly meanwhile, until the pressure-gauge on the cylinders indicates the desired pressure (40 to 60 pounds). Before agitating, open the cock at end of water supply-

pipe, allow the water to escape until the cylinders are but two-thirds full, and close the cocks below the cylinders. The method of proceeding, that is, filling the cylinders full and allowing one third to escape while the gas is flowing in, displaces the atmospheric air.

Continue to agitate the water and gas in the cylinders until gas ceases to pass over from the generator. The passage of the gas into the two cylinders to be charged to bottling pressure may be known by the clicking of the regulating-valve, as it automatically opens and closes. The water for bottling, in the two cylinders governed by the regulating-valve, is now charged, unless the pressure in the generator has fallen below that at which the regulating-valve is set, in which case it will be necessary to let down more acid and agitate the contents of the generator until the generator-gauge again indicates 150 pounds. This operation must be repeated whenever the pressure in the generator becomes low.

The contents of the cylinder which is to be charged to siphon pressure should be agitated until the hand of the generator pressure-gauge ceases to fall back, and stands at 150 pounds. The water in this cylinder is then charged to the pressure indicated.

Open the outlet-cock of the first cylinder, and allow the charged water to pass to the bottling-tables. As the water is drawn off from the cylinder the pressure will be maintained by the automatic action of the regulating-valve.

When the water in the first cylinder is exhausted, close the outlet-cock of the first cylinder and open the outlet-cock of the second cylinder, allowing the water from this cylinder to keep up the supply at the bottling-table.

Open the water inlet-cock of the first cylinder. Start the pump and inject water until the height of the column in the water-gauge glass shows that the cylinder is three-fourths full of water.

Always make sure that the water-gauge cocks are open when pumping water, and be careful not to fill the cylinders too full.

In recharging the first cylinder, time can be saved by charging it through the high-pressure pipe instead of through the regulating-valve. The gauge on the cylinders will show when the desired pressure is reached; the high-pressure cock can then be closed, and the regulating-valve will maintain the pressure as before. The third cylinder, meanwhile, can supply the siphon-filler until the pressure in the generator falls below 125 pounds. When this occurs, the generator agitator should be slowly revolved, and, if necessary, acid let down, and the pressure raised again to 150 pounds.

Continue the above described operations until the charge in the generator is exhausted and the pressure falls below the required point, which will be indicated by the pressure-gauges.

While the charge in the first generator is being used, the second should be charged and prepared for use.

When the charge in the first generator is exhausted, close the valve in the

large gas-pipe of the first generator and the cocks in the two vertical gas-pipes which connect with the bow-pipes. Start the cap on the filling-bung of one of the purifiers, and allow the pressure to escape. Open the blow-off cocks of the purifiers and draw off the water from them. Attach a hose to the cock at the end of the water supply-pipe, start the pump and wash out the purifiers, and refill them two-thirds full of water.

Return the caps to the filling-bungs of the purifiers and screw them firmly on.

Turn the three purifier two-way cocks so that the arrows point in the direction of the first generator. Open the valve in the large gas-pipe of the second generator, and allow the gas from the second generator to pass over and supply the cylinders.

The first generator should now be cleaned out and recharged.

If any portable fountains are to be charged, the gas remaining in the first generator may be utilized by partially charging them.

Start the clamp on the generator filling-bung, allowing the gas to escape slowly until the pressure is reduced to ten or fifteen pounds. Open the blow-off cock gradually and allow the spent charge to escape, turning the agitator constantly meanwhile. Never blow off the generator suddenly as there is danger of collapsing the lining. When the pressure-gauge indicates that the pressure has all escaped, and while the exhausted charge is escaping, remove the cap from the filling-bung, attach a hose, provided with a curved nozzle of proper size, to the cock at end of water supply-pipe, start the pump and throw the stream of water into every part of the generator body, turning the agitator constantly to facilitate cleaning.

Unless the generator is to be immediately recharged, the acid-chamber should be thoroughly cleaned by filling it with water through the filling-bung, and discharging into the generator body by opening the vitriol-valve. The generator should be *thoroughly* cleaned after each charge, as material allowed to remain will become hard and exceedingly difficult to remove, and if allowed to accumulate will eventually interfere with working the generator.

As the use of the regulating-valve allows the generators to be charged to much higher pressure than is required in the cylinders, portable fountains may be charged at any time without interfering with bottling operations.

The regulating-valve is not intended to be absolutely tight; when bottling is suspended, therefore, the cock above the regulating-valve should always be closed.

If, however, the cock should be left open, and gas should leak through the regulating-valve until both gauges register the same pressure, it is only necessary to waste off some gas at the filling-bung of one of the cylinders, before resuming bottling.

If the contents of the cylinders have not been agitated during or subsequent to the leakage, bottling can be resumed without blowing off gas.

THE MANUFACTURE OF SODA-WATER IN PORTABLE FOUNTAINS FOR THE DISPENSING TRADE.

THE manufacture of soda-water in portable fountains for the dispensing trade is a very profitable branch of the business. In some of the large cities there are firms owning large numbers of portable fountains, who make this their sole business.

Many bottlers who might add largely to their incomes by charging water for the dispensers in their vicinity, have old generators which they do not dare charge high enough to do this work. To such bottlers I would say, throw away the worthless old generator, which you are afraid of, before it does you an injury, and purchase a good generator. The business of charging portable fountains will pay for the new generator several times in a single season.

Some bottlers, having good generators, think they cannot afford to charge portable fountains, because a large amount of gas must be wasted in reducing the dispensing pressure in the generator to a bottling pressure. By the use of my patent equalizing-valve, which costs complete but \$35, these bottlers can charge portable fountains and at the same time fill bottles without wasting any gas.

The best portable fountain is the improved sheet tin-lined copper or steel fountain. Although the first cost is greater than the ordinary copper fountain, it is in the end the cheapest as it does not require relining every five years or oftener. It possesses all the advantages of a first-class fountain, being strong, light, and of convenient shape to handle; and as it can always be repaired, is practically indestructible.

Besides steel and sheet tin-lined copper fountains, I manufacture the ordinary copper fountain (No. 1 copper fountain), which is so well known to the trade. This fountain is lined with pure block-tin by my cold-chill process.

In charging portable fountains, the bottler should have a capacious generator, as the large amount of gas and the high pressure required rapidly uses up the acid and marble dust.

Experience shows that where fifty or more fountains are to be charged per day, the Jumbo generator (Style M, No. 1000) is the most economical size to use. Many of these generators are now in use by the largest concerns in the business, and also quite a number of the next smaller size (No. 750).

In charging portable fountains, pains should be taken to thoroughly cleanse the fountains before filling. Use plenty of water. You will be amply rewarded by securing a reputation for making good soda-water.

See that the cock is tightly screwed on to the fountain, using a long wrought-iron spanner-wrench, and that the washer between the fountain and cock is of thick, soft, oil-tanned harness-leather — not sole leather. This will prevent the pressure from leaking off. Nothing is more annoying to the dispenser of soda-water, than to find the pressure gone, when the fountain is only half empty.

Thoroughly agitate the fountain when charging, to allow the water to absorb the greatest possible amount of gas. A fountain-rocker greatly facilitates this operation. I can supply a good rocker shaker, which will accommodate any desired number of fountains.

Soda-water charged to 150 pounds and thoroughly agitated, is much better than if charged to 200 pounds and not thoroughly agitated.

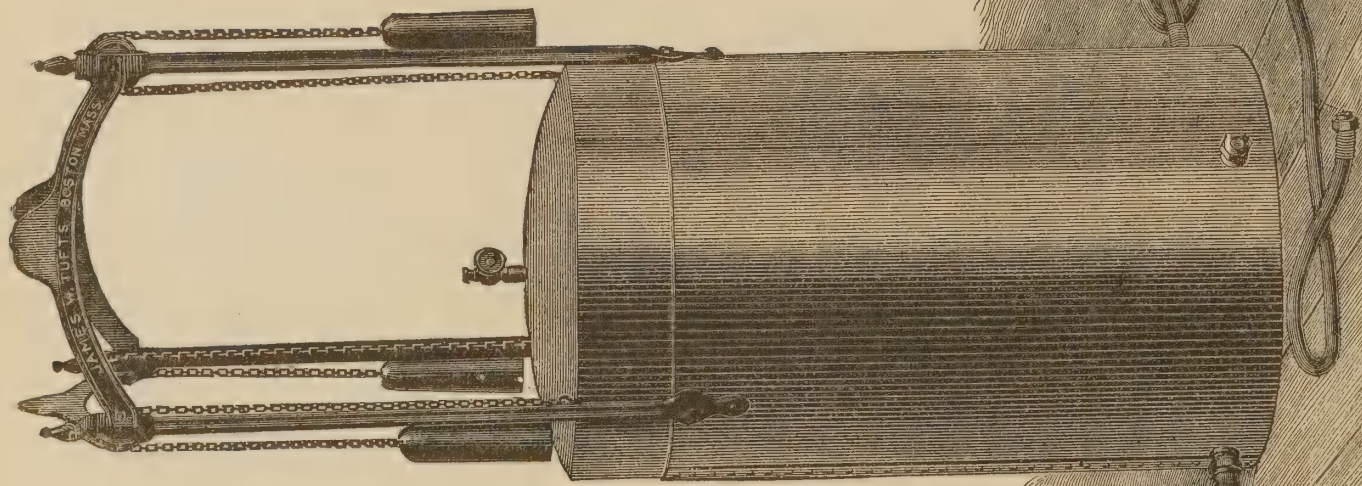
The use of multiple-cocks will be found of great convenience in enabling the operator to charge several fountains at one time.

The table of sizes and proportion of materials has already been given elsewhere in this book; and also directions for charging the generator.

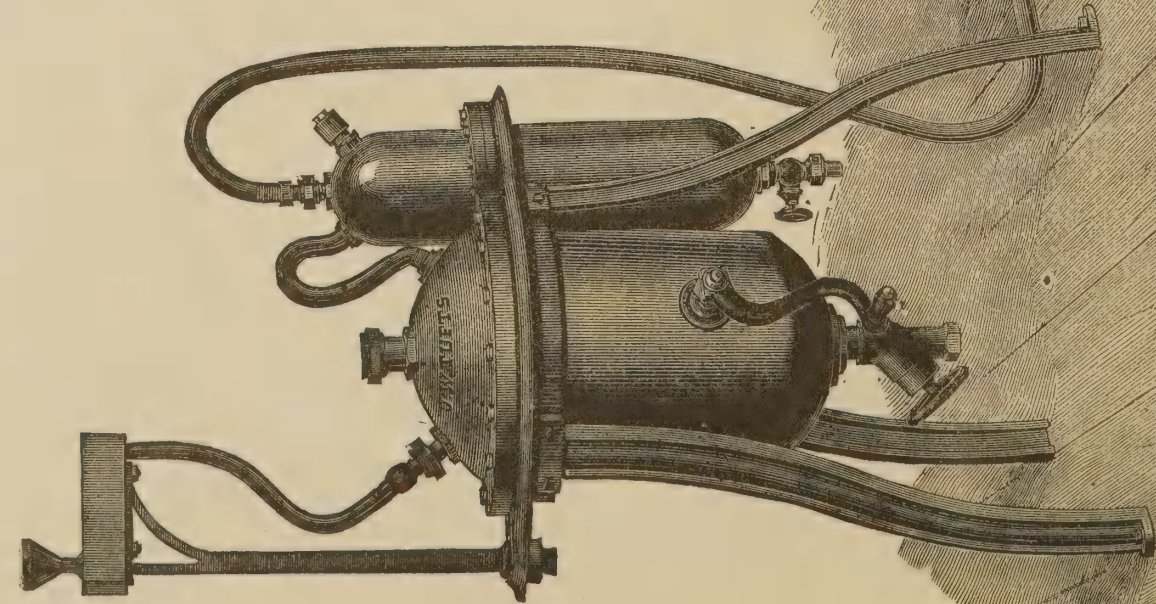
The fountains, multiple-cock, and other appliances are illustrated elsewhere.

A Hint about Charging Fountains.

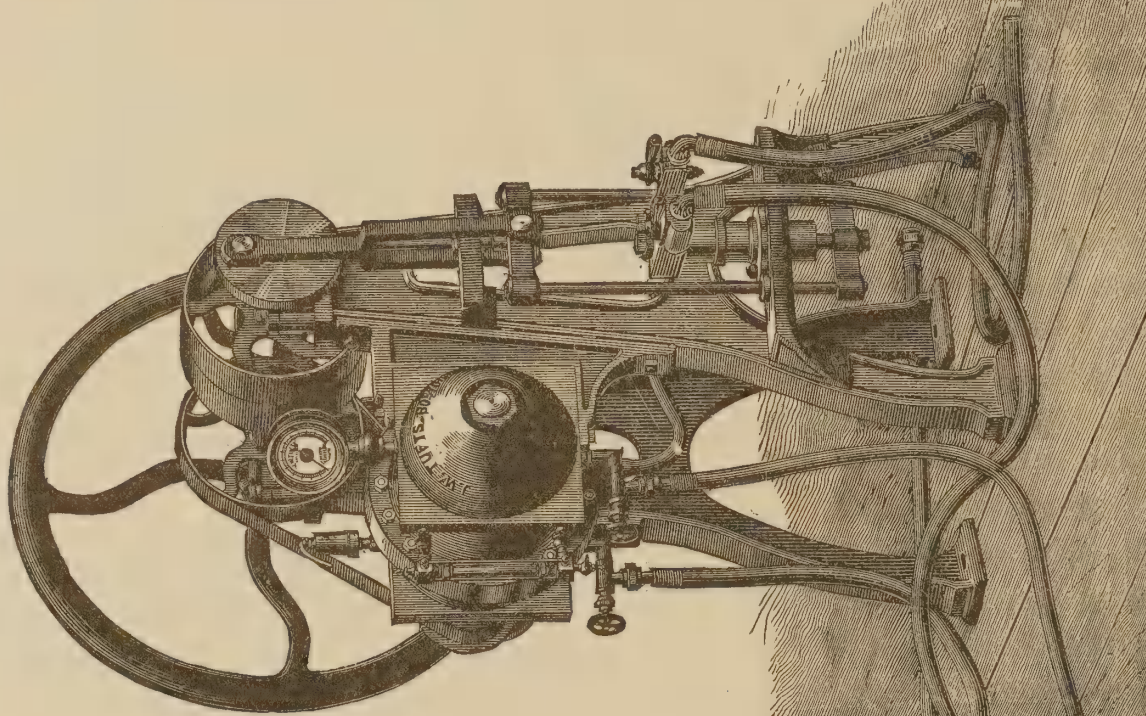
TOO many bottlers, druggists, and confectioners, says the "American Bot-
tler," entrust the charging of their "soda" fountains to ignorant or careless employees, who do not understand the importance of doing this at a uniform pressure. They turn to the charging-cock and let the full current of gas rush out of the generator so fast that the relaxed pressure causes the mixture to boil up, choking the pipes, invading the washer, and perhaps driving some of the sulphuric acid even the whole length of the charging-pipe into the fountain. Sometimes the operator does not know the cause of this "boiling up," and never suspects that it is entirely his own fault. Such is the case, however, and the phenomenon, with all its train of vexatious effects, may be readily avoided by a little care. When the gauge marks the desired pressure, say 150 pounds, turn the cock gradually, and by increasing or diminishing the flow of gas, or adding more acid, keep the pressure between 140 and 160 pounds during the entire operation. As a general rule, whatever the original pressure, it should not vary more than 20 pounds from the beginning to the end. This necessarily requires more skill and care than the too common, slipshod, hap-hazard method of charging, but is repaid tenfold by the certain avoidance of clogged apparatus and contaminated soda-water.



GASOMETER.



LOW-PRESSURE GENERATOR.



CARBONATOR.

CONTINUOUS BOTTLING APPARATUS, ENGLISH SYSTEM.

ENGLISH CONTINUOUS BOTTLING APPARATUS.

THIS apparatus consists of a low-pressure generator, a gasometer, to receive the gas as fast as produced, and a compressor or carbonator.

The compressor has a single acting pump, with valves in the top, which draws, at the same time, gas from the gasometer and water from a water tank and forces them into the cylinder where a revolving agitator thoroughly combines them.

The pressure is maintained by the pump and is regulated by the gas and water inlet-cocks, which may be set to admit any required quantity, and by the safety-valve, which is set to blow off all superfluous pressure. The pressure is indicated on the pressure-gauge, and the height of water in the cylinder is shown by the glass water-gauge. The compressor is arranged to be operated either by hand or power, but power is strongly recommended.

Directions for Operating.

SET up the apparatus as shown in the engraving. If power is to be used, the compressor must be firmly bolted to the floor, and the necessary shafting and belting provided and arranged.

Place the rubber tube connected with the water inlet-cock of the compressor in a tank of water, or connect it with the water-supply. Open the water-gauge cocks. Open one of the discharge-cocks below the cylinder. Open the water inlet-cock of pump. See that gas inlet-cock is shut. Start the pump by shipping the belt on the fast pulley, and thoroughly clean the pump, cylinder, pipes, and connections, by pumping water through them.

See that the cap at bottom of gasometer, and the couplings of the rubber pipes connecting the purifier and gasometer, and gasometer and compressor are tight. Open the air-valve on top of gasometer-bell, and pour water into the gasometer between the tank and bell, until it shows within about 3 inches of the top of tank. Close the air-valve.

Close the cock at bottom of purifier. Remove the cap from filling-bung and pour 2 gallons of water into the purifier. Return the cap and close the filling-bung tightly.

Close the blow-off cock at the bottom of generator. Take off the cap of filling-bung, insert the tin tunnel and pour in 5 gallons of water and 5 gallons of marble dust. Turn the agitator constantly while the marble dust is running in, to mix it thoroughly with the water. Close the filling-bung, and screw the cap firmly to place. When everything is clean, stop the pump. Connect the cylinder with the bottling-tables, by means of the rubber pipes provided for the purpose.

From a pitcher, or other suitable vessel, pour sulphuric acid (oil of vitriol) into the acid-box, — about half-pint or less.

Turn the agitator slowly. As the gas is formed it will pass through the rubber pipe into the gasometer. The acid-box is always open, and more acid may be added as needed. The acid-pipe extends to the floor (having been changed from the form shown in the cut) in the form of a U, and entering the generator at the top, pours the acid on top of the marble dust and water. The weight of the acid in this pipe is sufficient to prevent any pressure which may form in the generator from blowing back the acid out of the acid-box.

If by any accident more gas should be generated than the gasometer can hold, the superfluous pressure will escape through the water in the gasometer.

As the gas passes from the generator into the gasometer, the gasometer-bell will rise. Open the air-valve on top of the bell and allow the air to escape; as carbonic-acid gas is heavier than air, the air must pass out before the gas can escape. When the pungent odor shows that gas is rushing through close the air-valve. When the gasometer-bell has risen to nearly its full height stop agitating the mass in the generator. See that the water-gauge cocks of the compressor are both open, and that there is no water in the cylinder. Close the discharge-cocks below the cylinder. Close the water inlet-cock of the pump, and open the gas inlet-cock wide. Start the pump, and if it be desired to bottle at 60 pounds pressure, pump gas only until the pressure-gauge registers 15 pounds; then open the water inlet-cock about half way, and partly close the gas inlet-cock.

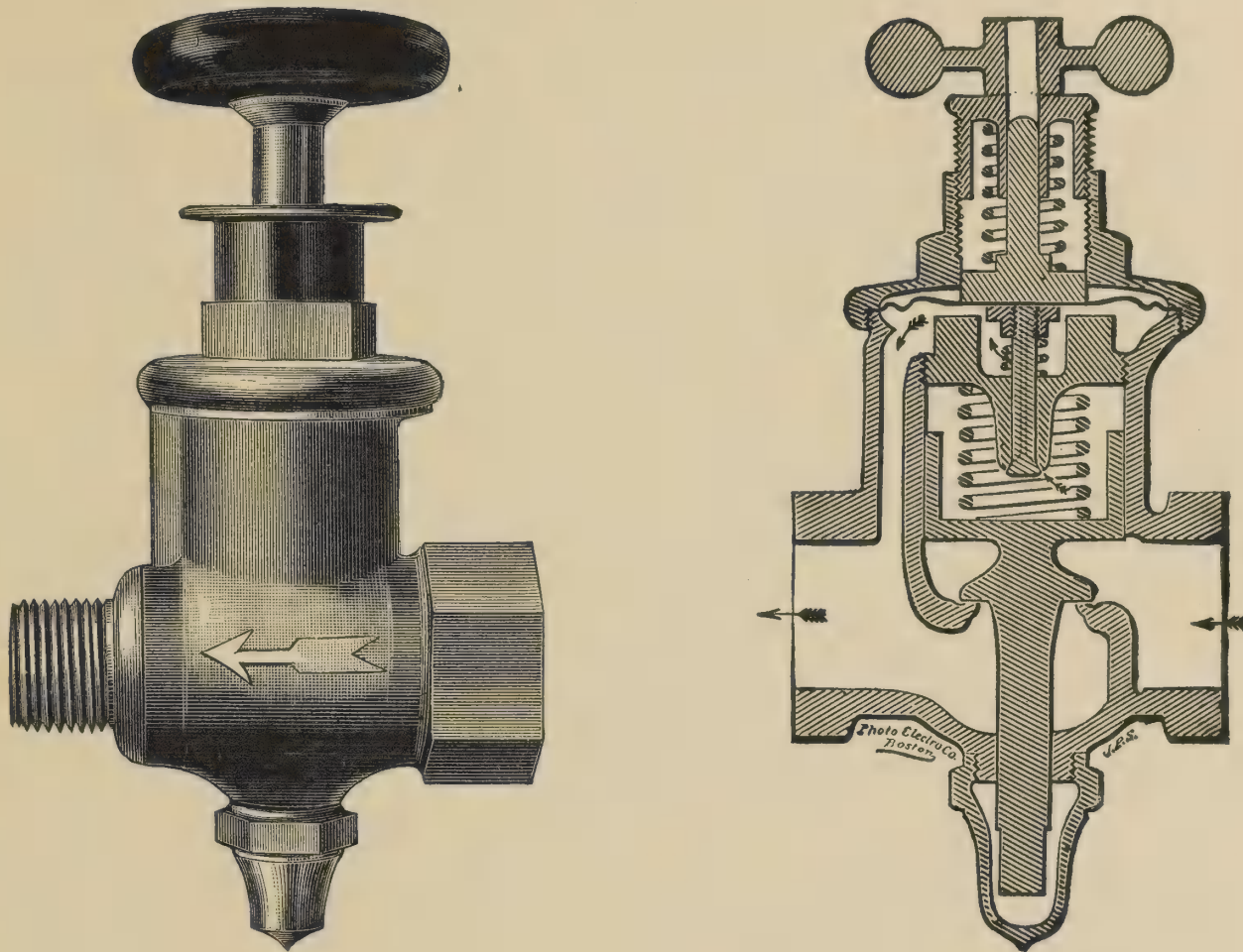
When the water-gauge shows that the cylinder is two-thirds full of water, and the pressure-gauge indicates the desired pressure, bottling operations must be commenced. Open the cylinder outlet-cock for the table which is to be used. If bottling half-pints, both tables may be used, but the pump will not supply water enough for both tables if quarts are to be filled. While bottling the pressure and water gauges must be watched, and the inlet-cocks adjusted from time to time, to keep the pressure constant and the water level in the cylinder at the same height. In other words, gas and water must be admitted to the pump as fast as drawn off at the bottling-table, and no faster.

The pump inlet-cocks have each a graduated scale, over which the pin on the end of the lever travels, marked "open" at one end and "shut" at the other, which makes a very delicate adjustment possible.

Do not allow the water to get ahead of the gas. It is much easier to pump water against gas than gas against water.

When the gas is nearly exhausted from the gasometer, which will be known by the descent of bell, pour a little more acid into the acid-box, and turn the agitator until the bell is again full. It will take two and one-half gallons of acid to neutralize the five gallons of marble dust in the generator.

Always stop the pump when bottling operations are suspended.



Directions for Regulating-Valve.

THIS valve has been so improved that it may be used in either a vertical or horizontal position.

Be sure that the gas flows in the direction of the arrow on the side.

Before charging the fountain or cylinder turn back the handle on top of the regulating-valve until it is nearly out, thus insuring that all pressure is removed from the spring; this closes the valve. Do not entirely remove the handle, as gas pressure on the under side of the rubber diaphragm will make it difficult to return the handle to place. Charge the generator to 150 pounds pressure. Open the cocks between the valve and the purifiers and the inlet-cock of the cylinder to be charged, wide open. If in order, the valve will open for a few seconds (until chamber over piston fills) and then close, shutting off all gas from the cylinders.

To open the valve turn down the handle, and continue turning down slowly until the desired pressure is indicated by the gauge on the cylinders. A slight turn of the handle either way will alter the pressure; and when once set it will maintain a uniform pressure at that point. If it should fail to close when the handle is turned back, it will be on account of dirt.

TUFTS' PATENT AUTOMATIC REGULATING-VALVE.

TO open the valve for examination: First turn the handle on top, and take out the spring under it; then remove the cap, taking care to slide it off sidewise, with the hand under the rubber diaphragm to keep it in place so that none of the parts will fall out and become lost. Unscrew the cap inside by means of the square top; then remove the spring and piston under it. If the piston sticks it can be pushed up by the stem projecting through the bottom.

See that the **seat**, and **valve**, and **piston**, and **stem** are entirely clean and free from all dirt, and that the hole in the piston (about the size of a pin) is clear. If the piston-valve does not drop freely into its seat, when perfectly clean take it out and reverse it, and try the piston in bottom side up; also try the stem by reversing the piston, and pushing the stem up from the bottom; wipe it perfectly clean, and if it is cut, polish it with fine emery paper. If in order, the piston should drop freely into its place on its seat, like a check-valve, and be perfectly free.

Before replacing the inside cap see that the secondary valve (in it) is free from dirt and perfectly tight. Screw the inside cap lightly into place, and close up the regulator by putting the outside cap (containing the diaphragm, follower, and spring) on, and screwing it firmly to its seat, thus making a gas-tight joint.

Be sure that there is no dirt on top of the regulator where the diaphragm makes its seat; also that the diaphragm is clean, then you will have a joint that will not leak. The regulating-valve is closed by unscrewing, and opened by screwing down, thus working the reverse of a cock.

When the valve is set at a given pressure it will allow any *lower* pressure to pass, but will not allow a higher.

In Brief.

PLACE it so that gas passes through it in the direction of the arrow on the side.

Before charging generator unscrew the top screw of valve so as to take off ALL PRESSURE from the spring.

Charge the generator to 150 pounds.

Open the cocks between the valve and the purifiers, and the inlet-cock to cylinder which is to be charged, wide open; put in and turn the top handle so as to put PRESSURE on the top springs, and keep on turning very slowly, agitating water and gas in the cylinder at the same time, until the desired pressure is reached.

When the valve is set LET IT ALONE. Shut off and let on gas with the cock. A lower pressure than that at which the valve is set can always pass, but a higher pressure cannot.

The valve may be placed in either a vertical or horizontal position, as convenience requires.

This valve is not intended to be tight.

To cut off generator from cylinders use cock attached to valve.

To Operate the Pump.

OPEN the gauge-cocks of the glass water-gauges on the cylinders and the cocks under the cylinders, and operate the pump until the height of water in the gauge glasses shows that the required amount of water has been injected into the cylinders.

Water-gauges on the cylinders are necessary when a pump is used.

After the water in the first cylinder has been drawn off, instead of blowing off the gas remaining in it, open the water-gauge cocks (if the cylinders are supplied with water-gauges) and the cock at the bottom of the cylinder, and with the pump fill the cylinder two-thirds full of water. When the water in the second cylinder has been exhausted, open the cock at the bottom of the second cylinder, and allow the gas remaining in it to pass into the first cylinder. Agitate the water in the first cylinder briskly, to absorb as much gas as possible from the second cylinder. Close the cock at the bottom of the first cylinder, and open the cylinder inlet-cock to allow gas to pass from the generator to complete the charge. The water-gauge cocks should always be open when the pump is being operated, and the cylinder inlet and outlet cocks closed.

The use of a pump is strongly recommended, especially where power can be had to run it. By its use all the gas in the cylinders is saved.

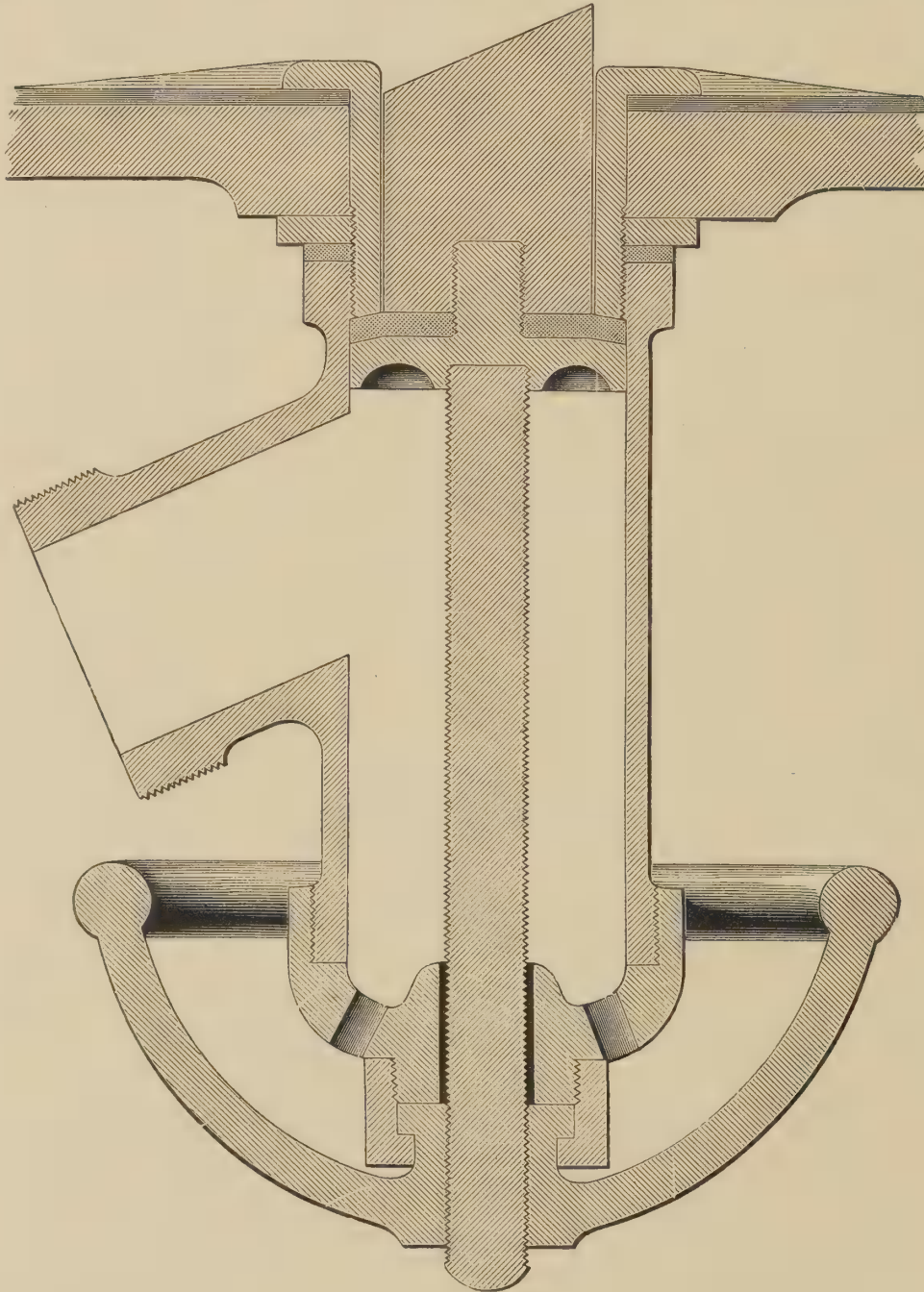
To Stop Leakage from a Sand-Hole.

DRILL a small hole through the sand-hole, and drive into it a piece of brass wire ; then "sweat" the end over. This work, however, should only be entrusted to a good machinist.

To Clean Very Dirty Bottles.

THE following preparation is recommended as an efficient solvent for grease in obstinately dirty bottles: Take of castile soap in shavings, 4 ounces; carbonate of soda, 2 ounces; borax, 1 ounce; aqua ammonia, 7 ounces; alcohol, 3 ounces; sulphuric ether, 2 ounces; add soft water sufficient to make 1 gallon. The soap should be boiled in the water until it is dissolved, and the other ingredients then added.

Directions for Tufts' Low-Pressure Blow-Off Cock, No. 1.



IN attaching the cock to the generator it is not necessary to use a wrench; it can be made sufficiently tight by hand.

The operation of the wheel is the reverse of that of an ordinary cock. Turn to the right to open and to the left to close.

In opening the wheel does not descend; the spindle moves through it and is prevented from revolving by its square shape.

To blow off, open the valve wide.

It is necessary after washing out the generator to partly close the cock—to black

mark on spindle — and pour water through filling-nipple to wash out the cock.

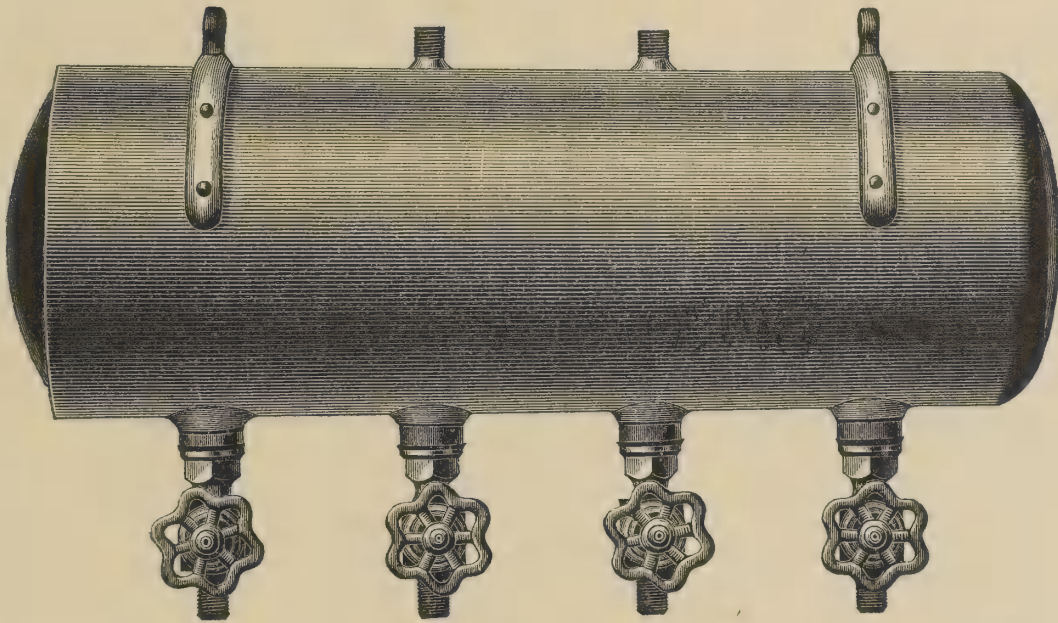
To take out the spindle and valve, apply the monkey-wrench to the square spindle and thus unscrew the cap.

Directions for Tufts' Low-Pressure Blow-Off Cock, No. 2.

THE operation of this cock is the reverse of that of an ordinary cock. Turn to the right, as a screw is driven, to open, and to the left to close.

The valve of this cock seats on a sleeve which is screwed inside the bung. To renew the washer, take out the sleeve with a wrench, and the spindle and washer can then be removed.

This cock can only be attached to generators having a screw thread inside the bung.

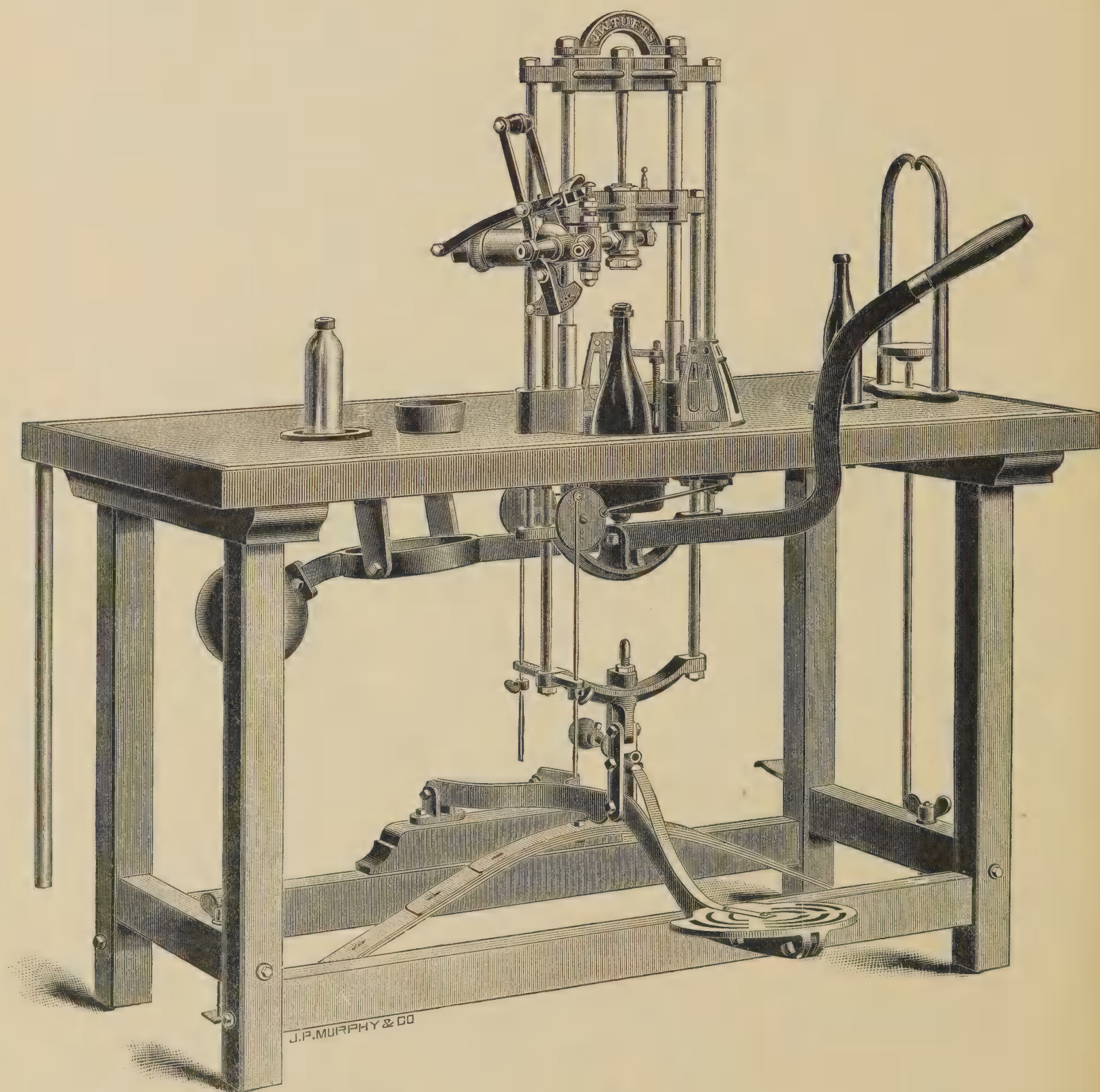


Distributing Cylinder.

FOR equally distributing the pressure where two or more bottling-tables are supplied from one fountain.

Directions.

ATTACH the pipes leading from the outlet on connecting-pipe of bottling-cylinder to the inlet on top of distributing-cylinder, attach the rubber hose and connect with the bottling-table to one of the cocks on the distributing-cylinder.



IMPROVED BOTTLING-TABLE.

(PATENTED.)

DIRECTIONS FOR TUFTS' IMPROVED BOTTLING-TABLE.

To Set up the Table.

FIRST attach the hand-lever, making fast to the yoke, fastening the ring on the lever to the toggles and attaching the back weight. Attach the treadle, first making fast to the back rests and then to the toggle, placing the curved projection of the treadle upon the spring. Make fast the brass strap of the cork-gauging device to the foot piece of the treadle, by means of the screw which will be found in the treadle.

Place a bottle, of the size for which it is desired to adjust the shield, in the proper position (a quart bottle should be placed in the bottom of the recessed plate pot; for a pint bottle place the small plate in position; for a half-pint bottle place the large plate in position), and placing the foot on the treadle bring the filling-head or cylinder down firmly on the bottle. Close the shield around the bottle with the hand, and press down the hand-lever slightly to enable the springs to catch and hold it in place.

Adjust the lock-nuts on the rods which pass through the bracket on the treadle yoke, so as to bring the spiral spring up to the bottom of the bracket.

To attach the patent syrup-pump: Turn back the check-nut on the long arm of the pump. Place a leather washer in the filling-head or cylinder, and screw in the long arm of the pump until it brings up on the washer, using great care not to cross the thread. Bring the barrel of the pump into a horizontal position, and turn up the check-nut hard, *metal against metal* with a monkey-wrench. Do not place a washer between the check-nut and filling-head. Hang the syrup-can in a convenient place, and connect it with the syrup-pump by means of the rubber tube. A cock is provided with which to shut off the syrup when desired.

If the syrup-gauge is used, instead of the syrup-pump, attach it by screwing into the filling-head. As it has no check-nut, it will be necessary to use, on the arm or in the filling-head, a washer of such thickness that the gauge when screwed home will stand in the desired position. The syrup-can must be placed in an elevated position if the syrup-gauge is used.

Attach the rubber tube from the cylinders to the water connection of the pump or gauge.

To attach the tyer: Place the bench-plate in position, and insert the horns in the holes, making fast underneath by means of iron washers and nuts. Pass the rod up through the hole, and screw on the bottle-plate. Place the treadle in its holder and fasten with the bolt, and attach the rod to the end of the treadle.

To Operate the Table.

PLACE a bottle in position for filling. Place the foot upon the treadle and bring the filling-head down firmly upon the bottle, at the same time bringing the cock-gauging pin into position by placing the toe on the brass strap. Place a cork, previously well soaked in warm water, evenly in the top of filling-head, and with the hand-lever drive it part way through, using care not to drive it far enough to obstruct the passage through which the syrup and water are to pass. Having previously pegged the syrup-pump or gauge, by means of the pin and disk, to throw the desired quantity of syrup, and opened the cocks which admit the syrup and water, make a backward stroke and draw the syrup into the pump or gauge. Then make the necessary forward stroke, throwing the syrup into the bottle and opening the water-valve. The air in the bottle should escape through the air-valve on the further side of the filling-head, which may be adjusted by means of its cap.

As soon as the bottle is sufficiently filled, make a backward stroke with the pump, thereby shutting off the water and drawing syrup for the next bottle, and drive the cork by a downward stroke of the hand-lever. Release the cork-gauge by raising the toe slightly from the brass strap, still holding the filling-head down firmly on the bottle with the foot, and raise the hand-lever a trifle to allow the pin to drop back out of the way. Now release the treadle (still holding the hand-lever down firmly to retain the cork in the bottle), and the filling-head will rise from the bottle sufficiently to allow the wire-fastener to be turned up over the cork, or the bottle and cork to be seized with the corking-tongs if it is to be wired. The hand-lever may now be released, and when it has risen to its highest point it will disengage the springs which hold the safety-shield, and the shield will fly open. The bottle can now be removed, and if to be wired, is taken to the tyer where it is held while the wire is attached and fastened.

Keep the working parts of the table well oiled and free from rust. Connections are provided on the pot of the recessed-plate, on the air-valve, and on one corner of the table, to which drain-pipes can be attached, for the purpose of removing waste water and keeping the table and operator dry. The table should be so placed that the waste water will run toward the corner which is provided with the drain connection.

The cork-gauging attachment is a new patented improvement which enables the operator to drive every cork exactly the same distance into the bottles, no matter how they may vary in height. But little practice is required to enable the bottler to work rapidly with it, and it will be found a great improvement and convenience. The pin can be adjusted, by loosening the check-nut and screwing the pin either up or down as desired.

Capping and Wiring.

THE tyer will be found of assistance in capping and wiring. It is shown attached to the end of the bottling-table and consists of an iron arch sufficiently high to allow the bottle to be placed under it, and of a movable platform which can be raised by means of a pedal. The bottle while under the cork-plunger of bottling-table is seized with the cork-holding tongs and placed on the platform, and by pressing on the pedal with the foot, the bottle is brought up against the top of the arch, thus holding in the cork while the tongs are removed and the wire applied.

The helper, on taking the filled bottle from the table with the cork-holding tongs and placing it under the tyer, quickly seizes a wire with his right hand, puts it around the neck of the bottle, giving it a couple of twists to hold it firmly in place, and passes the ends through the loop, draws tight, cuts off the superfluous wire with shears, and presses the ends into the cork. The pressure in the bottle has by this time forced the cork against the wire, so as to make a neat looking job.

When the tin foil is used in capping, it is previously cut in sheets of the proper size. The operator places a sheet on the palm of his left hand, covers it with paste, and taking the bottle in his right hand, he places the neck on the sheet of tin foil, and by a dexterous turn wraps the latter about the bottle neck and cork.

There are many accessories which can be advantageously used in wiring and capping, if desired; such as the cork-holding tongs, for taking bottle from bottling-bench; the tying-lever for tightening wire over cork; the rubber-faced mallet for driving back a cork which is escaping; the metallic cap, often used in place of tin foil.

If it is desired to cap the bottles, the capping machine made by Witteman Bros., 192 Fulton Street, New York, will be found very desirable. The Abbott wiring machine, found on page 42 of the January (1890) number of the "American Carbonator," is also desirable.

Paste for attaching Labels to Bottles or Packages.

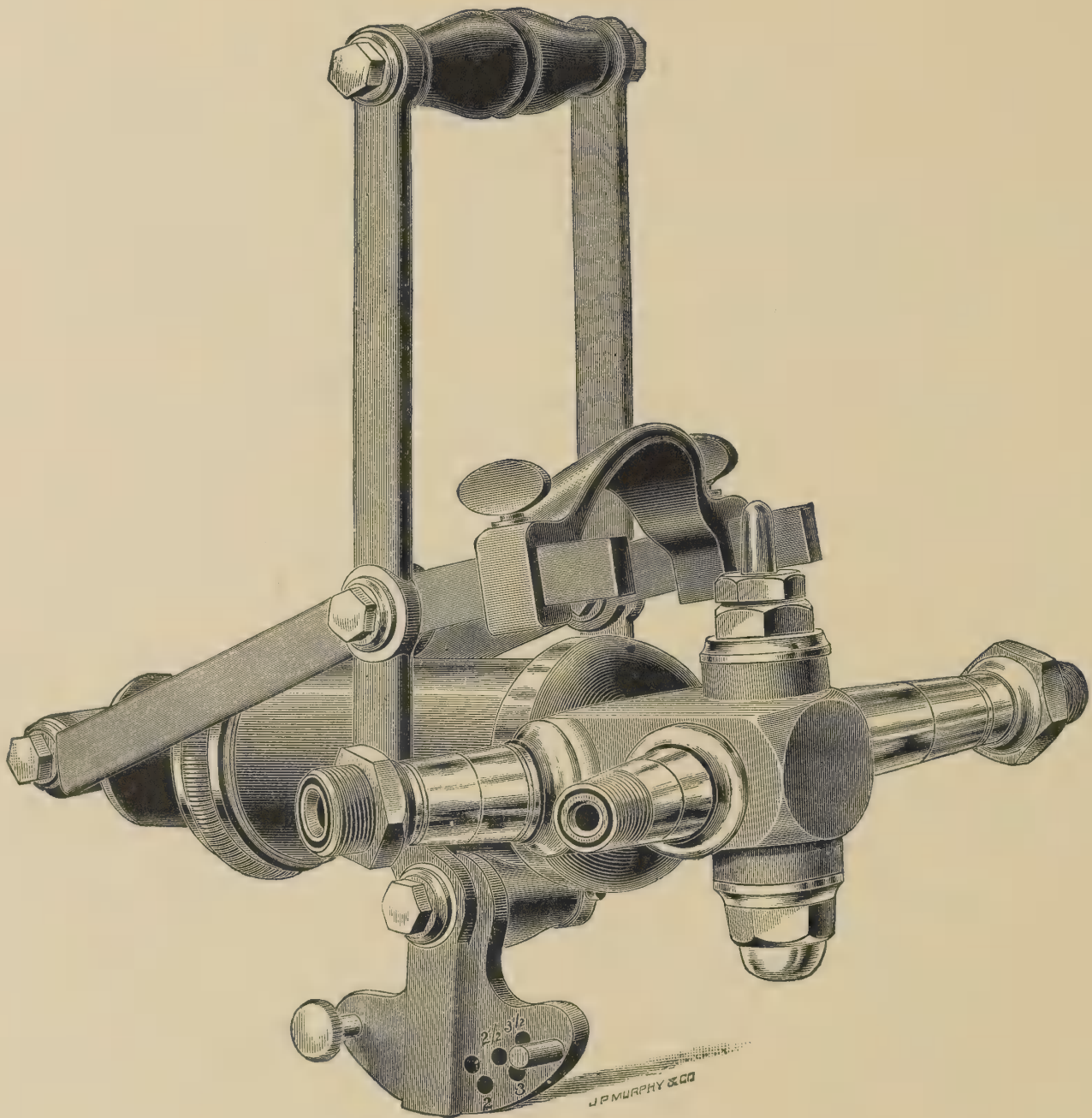
A CELEBRATED chemist has given me the following new formula for a paste which has the following advantages over pastes heretofore made: —

It is very cheap and very quickly and easily made, requiring no heat.

It looks like and can be used as mucilage, and will hold better than gum tragacanth. It will not spoil and become rancid.

Potato Starch	. . . . .	1 ounce
Water	. . . . .	3 or 4 ounces
Solution of Caustic Soda	. . . . .	a sufficient quantity

Mix the potato starch in the water to a smooth paste, and slowly add the solution of caustic soda until the paste becomes gelatinous.



Directions for Patent Syrup-Pump.

IN adjusting this pump to the filling-head, place a washer in the female coupling of the filling-head, and screw the pump in until it brings up firmly on the washer. Turn the pump around until it is in a level position, convenient for working, then screw up the loose nut on the outlet passage of pump against the filling-head. This nut is intended for a check-nut, and must be screwed up tight metal to metal to prevent the pump from turning when in use.

At the end of the upright arm is a disk with screw pin and holes for gauging the quantity of syrup. The outside holes are for 1 ounce, 2 ounces, and 3 ounces, and the inside holes for $1\frac{1}{2}$ ounces, $2\frac{1}{2}$ ounces, and $3\frac{1}{2}$ ounces. For 4 ounces let the arm strike the stationary pin; placing the movable pin for safe keeping in the hole which is not marked.

The operation of the pump is a forward-and-back direct motion, making the stroke very short. The opening of the soda-water valve is at the extreme end of the stroke, and the syrup is all discharged from the barrel before the water-valve is opened.

The pump may be adjusted as desired, to open the water-valve wide for quart bottles or slightly for half-pint bottles, by moving the slide on the arms and setting it by means of the thumb-screws.

Plain soda-water may be bottled without disconnecting the pump. Shut off the syrup, and grasp the slide (that opens the water-valve in ordinary operation, and in refilling a bottle when a cork is lost in filling) with the fingers, press upon the valve with the base of the thumb. This has been found to be a most convenient and expeditious method of bottling plain soda.

Oil the packing at head of plunger occasionally with sweet oil. This can be done by unscrewing the large nut.

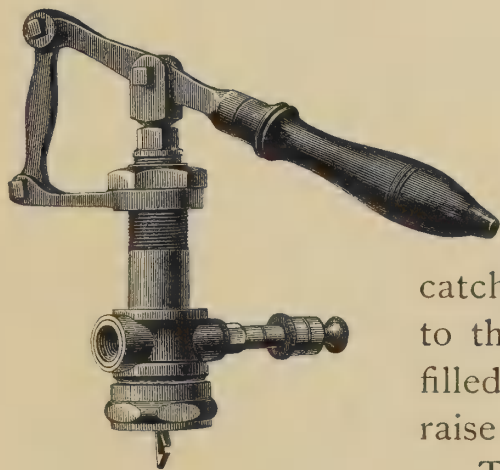
Directions for Hutchinson's Attachment.

To adjust the Bottling Attachments for Stoppers into Corking-Tables: —

First. Remove the cross bar that holds the cork-plunger.

Second. Remove the filling-head.

Third. Put in the stopper attachment and have the bracket that holds the lever for pulling up stoppers, between the cross bar holding filling-head and back nut that holds the filling-head in place. This gives the lever ample play so that the stopper can be pulled to its closed position.



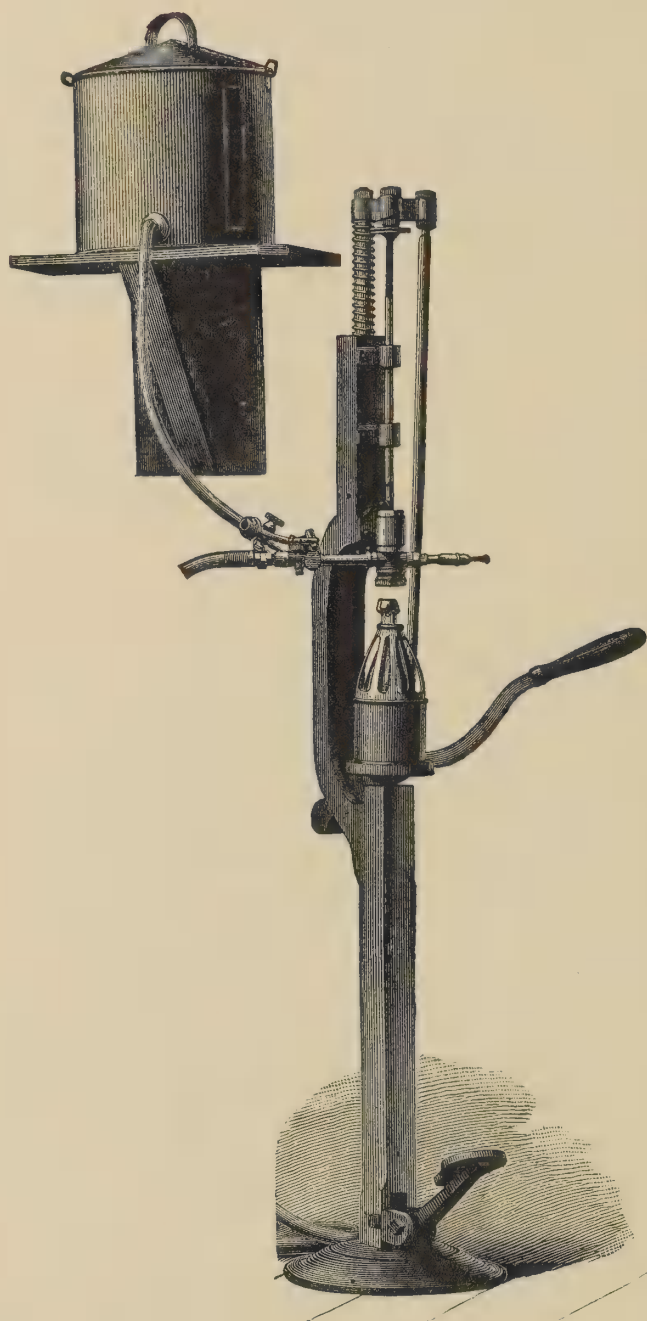
To fill the Bottles with a Plain Hook:

Place the bottle under the cylinder; catch the hook in the stopper, then lower the cylinder to the bottle; open the syrup and water gauge; when filled, close the syrup-gauge, draw up the stopper, and raise the cylinder. The bottle is filled.

To Bottle with Automatic Rod: Place the bottle under the cylinder; lower the cylinder to the bottle; open syrup and water gauge; when filled, shut off the syrup-gauge, lower the rod, and pull up, and the bottle is filled.

To Bottle with Guide Hook: Put the bottle under the cylinder; lower the cylinder upon the bottle; open syrup and water gauge; when filled, shut off syrup-gauge; lower hook, and pull it up again, and bottle is filled and stopper closed. Always turn guide toward the operator putting in and taking out bottles.

Directions for Bottling Machine No. 1.



FIRST see that your corks are well soaked in hot water, which will soften them so that you can force them into the head of the bottle easily. Place the bottle in position upon the stand and by pressing with your foot upon the treadle force it up into the filling-head, place the cork in top of filling-head and taking hold of handle of the lever, force it (the cork) down, but not so far as to obstruct the passage from the syrup-gauge, then open the syrup-gauge for the passage of soda and syrup into the bottle, and after it is full, force the cock into the neck. To put the wire over the cork, ease up on the treadle, and at the same time follow the cork with the "plunger" until the treadle brings up solid on the base, which will give you plenty of room to arrange the wire. Be sure that the air-valve in the side of the filling-head is not screwed up so tight as to prevent opening, while you are filling, to let the air pass out.

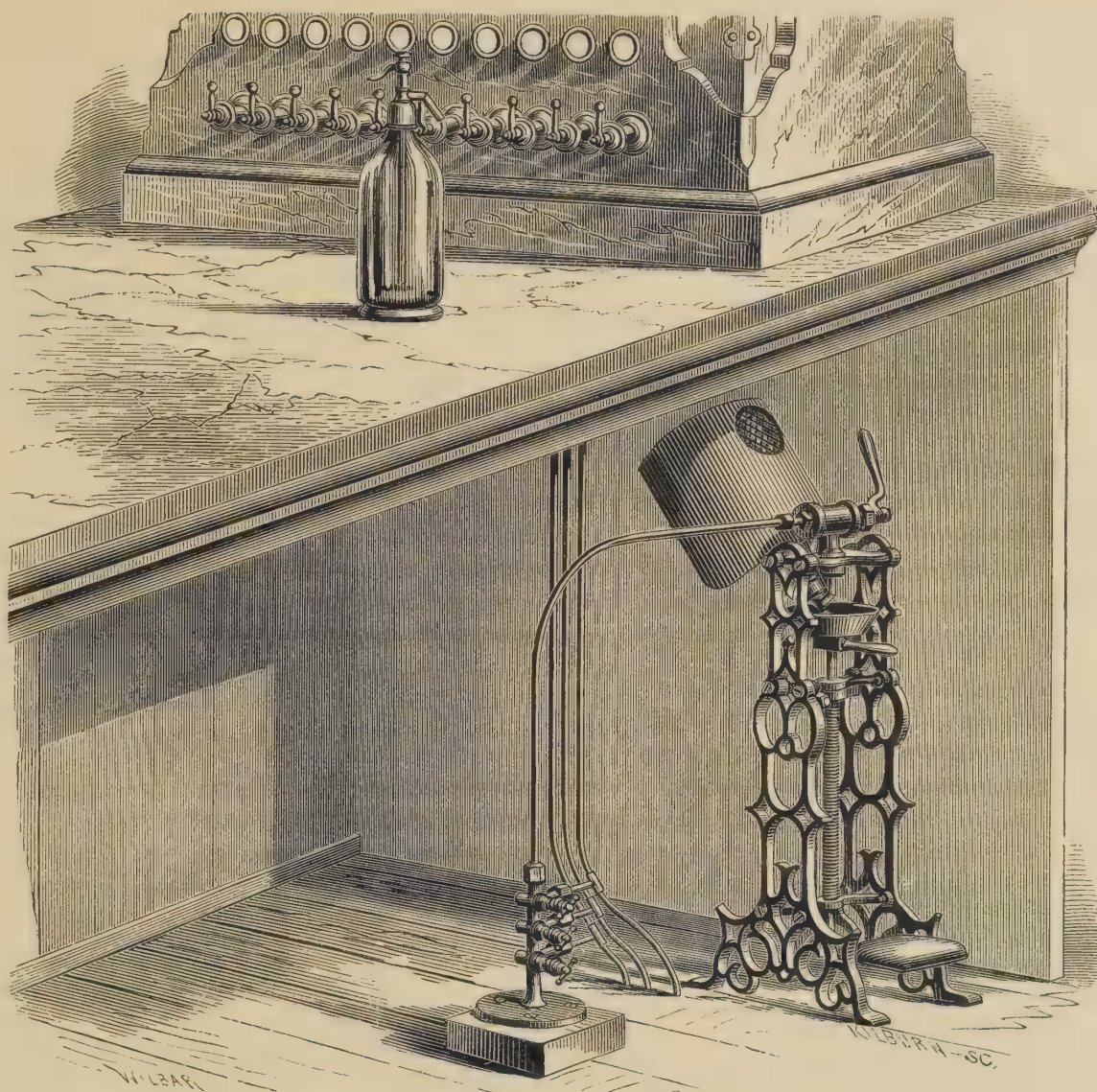
While the machine is new, the use of a little lard on the passage way of the cork would be judicious, until it gets worn smooth by passing of the

cork. An adjustable block admits the use of different sized bottles.

We have this year discarded the spring, and use instead a weight on the end of corking-lever. This improvement makes the operation of the machine much easier.

Directions for substituting Hutchinson's Attachment for Filling-Head of Bottling Machine No. 1.

TAKE off nut attaching the plunger-rod to the branch at the top, and remove the plunger-rod. Then remove the bottling-cock used for corks and insert the Hutchinson in same socket and attach the syrup-gauge same as before.



Directions for Siphon-Filler No. 1.

IF used under the counter, fasten the machine to the floor by means of screws. Place the end of the rubber tubing (which allows the escape of waste water) in an open-mouthed bottle or other suitable receptacle.

To operate the machine, place the left knee upon the pedal, and press it down to its full extent. Take the bottle in the right hand, and insert the spout carefully in the neck of the transfer-cock; then allow the spring to press the socket in the concave plate on to the head and lever of the siphon; pull up upon the knee pedal or upon the projecting handle, to drive the spout of the bottle into the neck of the transfer-cock, and the spring will then be sufficient to keep it in place.

Turn the handle of the transfer-cock toward you far enough to allow a good flow of water into the bottle, holding the handle in the same position until the water stops flowing into the siphon; then turn the handle still more in the same direction to open the air passage to the bottle. Allow the air to escape *quickly* to avoid the loss of gas, then bring the handle back to allow more water to run into the bottle. *If the water stops flowing into the bottle*

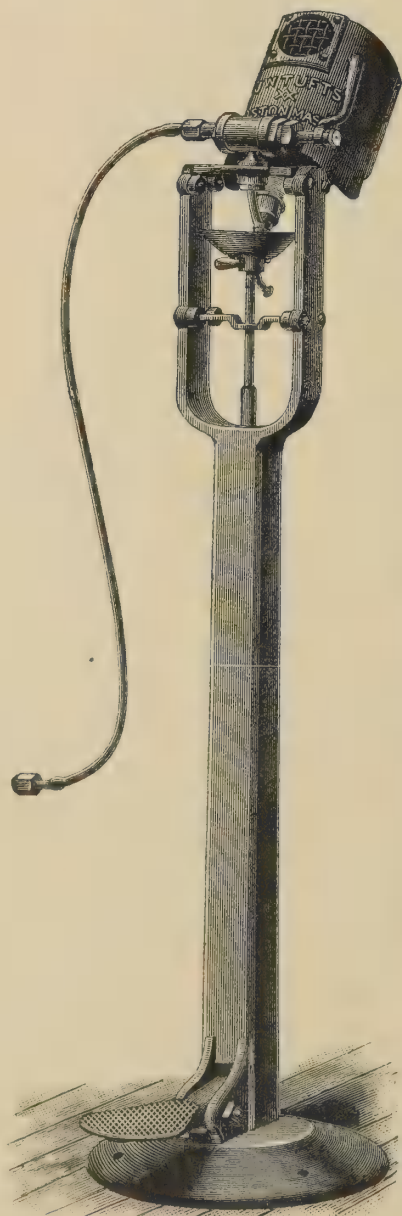
again before it reaches the end of the glass tube, let off more air as before. Shut off the transfer-cock by turning the handle from you as far as it will go.

Be sure to allow ample space in top of siphon for the gas, for it depends upon this for pressure for discharging its contents.

In removing the bottle, hold it firmly into the neck of the transfer-cock until you press down the shaft to allow the cock of the bottle to close; this should be done quickly, so as to allow the valve in the bottle to close instantly otherwise the water will spurt from the bottle. The shaft being now down to its full extent, you can remove the bottle from the neck of the transfer-cock.

The bench should stand against the wall, or there should be a fender of some kind as a protection against flying glass, in case of breakage of siphon.

Two or more waters may be connected with the machine by use of the cocks shown in the illustration. Use care to close off the water after filling the bottle; for although the cocks are so constructed as to prevent the contents of one fountain flowing into another, should two be open, still the contents of the highest charged fountain would fill the bottle, should the operator accidentally allow two cocks to be open when filling the siphon.



Directions for Siphon-Filler No. 2.

FASTEN the machine to the floor with screws. To operate the filler, take the bottle in the left hand and insert the spout in the neck of the transfer-cock; then place the foot on the treadle and force the saucer up against the siphon-head; this will open the siphon-valve and keep the siphon-bottle in position while filling. Turn the handle of the transfer-cock toward you, far enough to allow a good flow of water into the bottle, holding the handle in the same position until the water stops flowing into the siphon, then turn the handle still more in the same direction, to open the air passage to the bottle. Allow the air to escape *quickly* to avoid loss of gas; then bring the handle back to allow more water to run into the bottle. If the water stops flowing into the bottle again before it is full, let off more air turning the handle back quickly. Sometimes this operation will have to be gone through three times in filling a bottle, as the air must escape before the water will run in. Do not fill bottle too full; allow a little space for gas, as you depend on it to empty the bottle.

In taking siphon out of machine, let the valve close *quickly* to avoid the escape of gas.

Directions for Siphon-Filler No. 3.

FASTEN the machine to the floor with screws. Adjust the filling-cock to fit the siphon-bottle and fasten by means of the set screw.

The shield and the lever which opens the valve of the siphon-bottle act automatically.

The shield is large enough for a thirty-seven-ounce siphon.

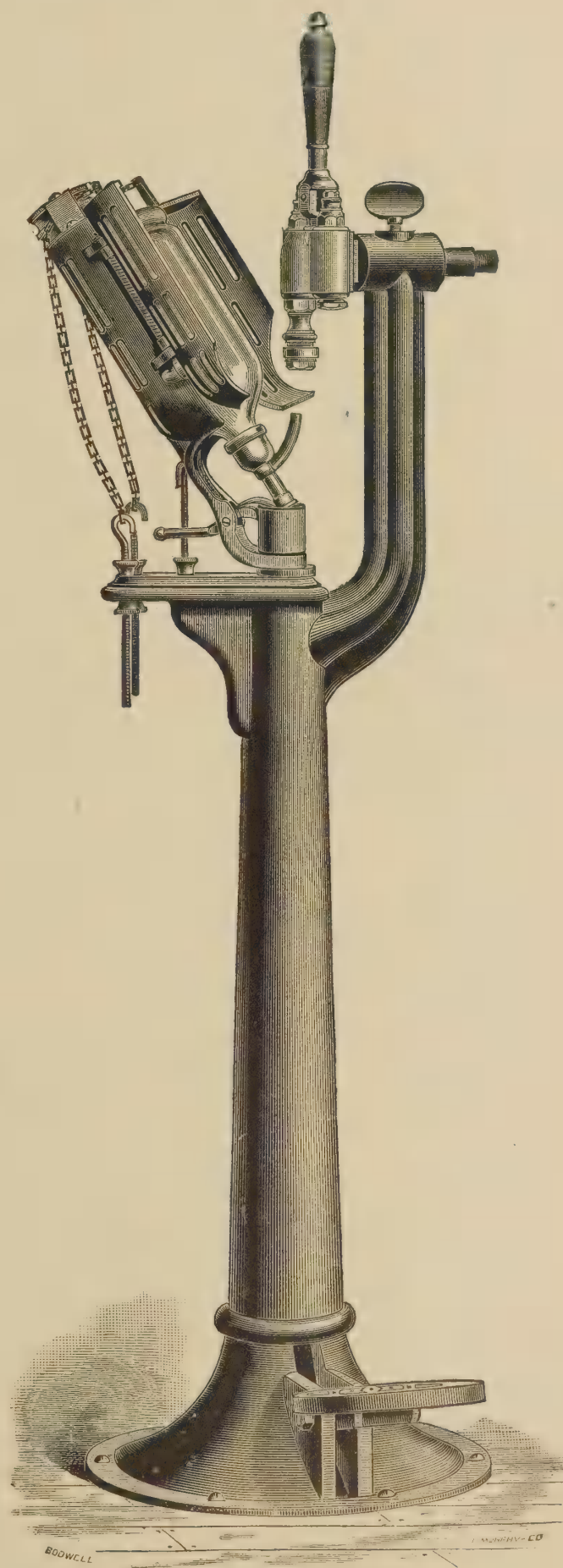
To set the shield: Slack the chains sufficiently to allow the shield to remain open when the nozzle of the siphon-bottle is forced up into the nozzle of the filling-cock. Then, keeping the foot on the pedal, close the shield around the bottle and hold it closed while adjusting the chains by means of the thumb-nuts on the hooks to which they are attached. Both top and bottom thumb-nuts should be made tight when the length of the chain is properly adjusted.

To set lever which opens the valve of the siphon-bottle: Loosen the nut on the hook which operates the lever, and screw the hook up or down as may be required to open the valve.

Use care not to set the hook so as to strain the lever of the siphon-bottle. The hook should be adjusted to open the valve wide and not strain it beyond that point.

After adjusting the hook to the desired height, tighten the thumb check-nut, and thus prevent the hook from turning.

To fill the bottle: With the foot on the treadle force the nozzle of the



siphon-bottle into the nozzle of the filling-cock, and hold it firmly in that position while filling. Pull the lever of the cock toward you, thus opening the water-valve, and when the water stops flowing into the bottle, open the air-valve by forcing the lever from you, allowing it to close quickly. The air being thus allowed to escape, more water will enter the bottle upon again opening water-valve.

If the water stops flowing into the bottle before it is full, open the air-valve again and allow more air to escape.

Do not fill the bottle more than four-fifths full. Allow sufficient space for gas enough to empty the bottle.

In taking the filled bottle out of the filler, raise the foot quickly to avoid escape of gas.

DESCRIPTIVE

CATALOGUE OF

JAMES W. TUCKER'S

ARCTIC

SODA-WATER APPARATUS.

Boston Mass.

U.S.A.

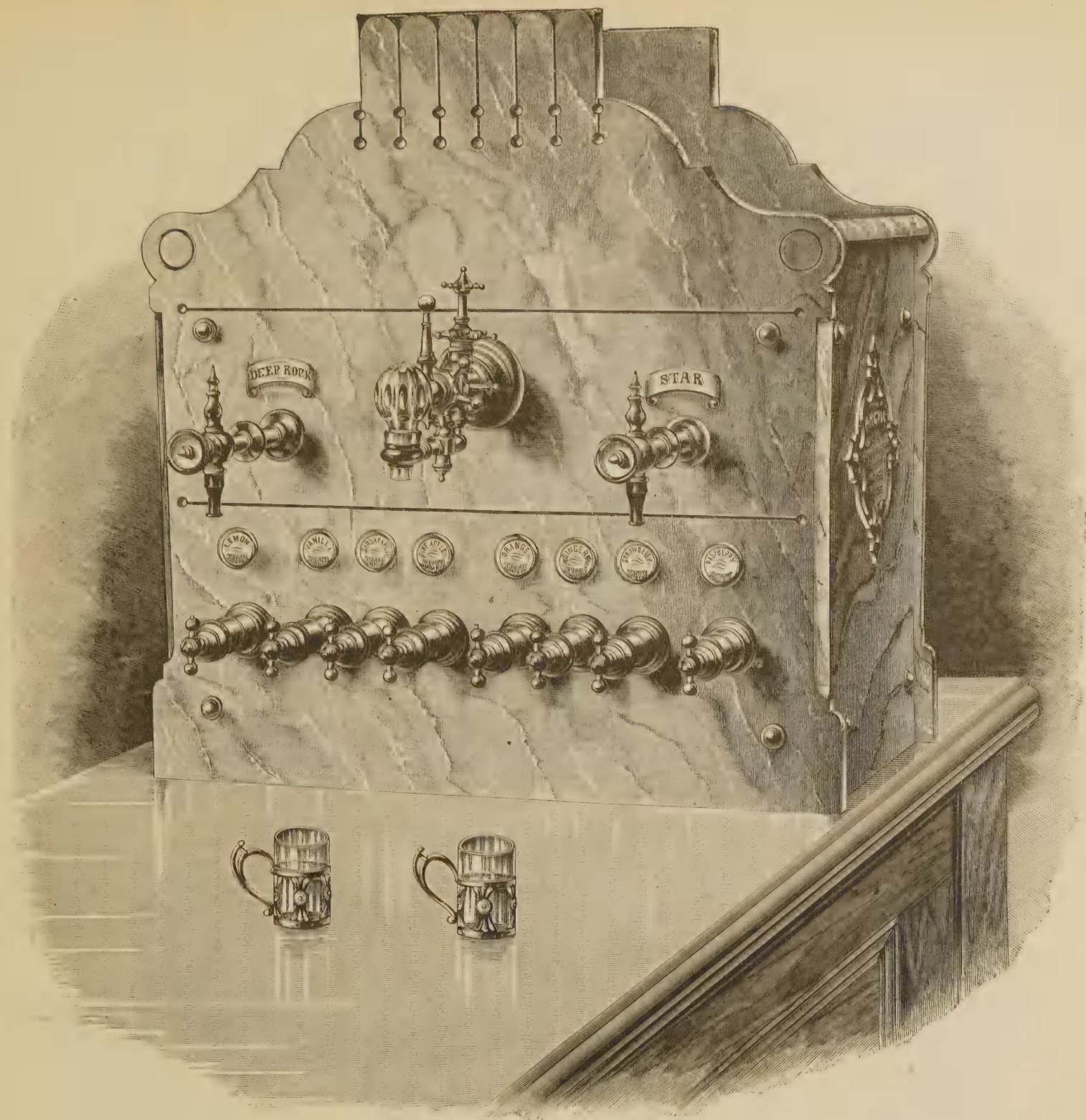
OFFICE AND MANUFACTORY

33 & 35 BOWKER ST.

NOS.

CATALOGUE.

To parties about to engage in any branch of the soda-water business, my full illustrated catalogue and price-list will be sent free, by mail, upon application.

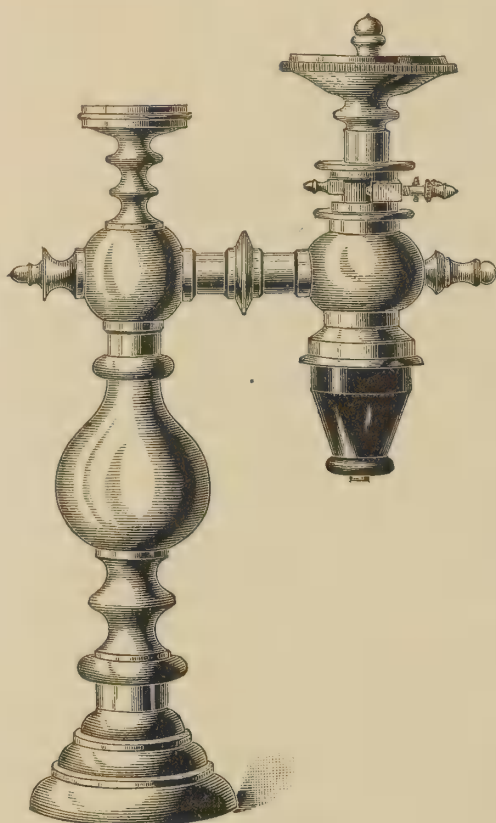


THE WARWICK.

A HANDSOME, low-priced counter apparatus. The outline of this apparatus makes it quite pleasing to the eye. Its length is great enough to admit of all the glass jars being removable. It is high enough in the body to take the second size of glass jar, and give ample space for ice. As represented, it is in Star marble. The front is relieved by a few lines incised and gilded.

SIZE. — Length, 2 feet 10 inches ; width, 1 foot 6 inches ; height of body, 2 feet ; extreme height, 2 feet 8½ inches.

Price given in Apparatus Catalogue, which will be sent free, on application, to any one thinking of purchasing.



COUNTER DRAUGHT-TUBE.

(PATENT DOUBLE STREAM.)

This tube affords the simplest means of dispensing soda-water.

SIZE. — Height, $13\frac{3}{4}$ inches ; extreme length, $8\frac{1}{4}$ inches.

PRICE.

Draught-tube only	\$25.
Draught-tube, with 8 syrup-bottles, having names etched in glass, small patent cooler, and zinc-lined ice-box	60.

As price does not include coolers, pipes, etc., it will be necessary to use the Siberian ice and cooler box, or one of the cooler boxes, shown below and on opposite page, with this draught-tube.

ICE AND COOLER BOX.

(WITH PATENT COOLER FOR COUNTER DRAUGHT-TUBE.)

THIS ice and cooler box is intended for use with the patent double-stream counter draught-tube shown above, or any other draught-stand. It is made of heavy stock and lined with zinc.

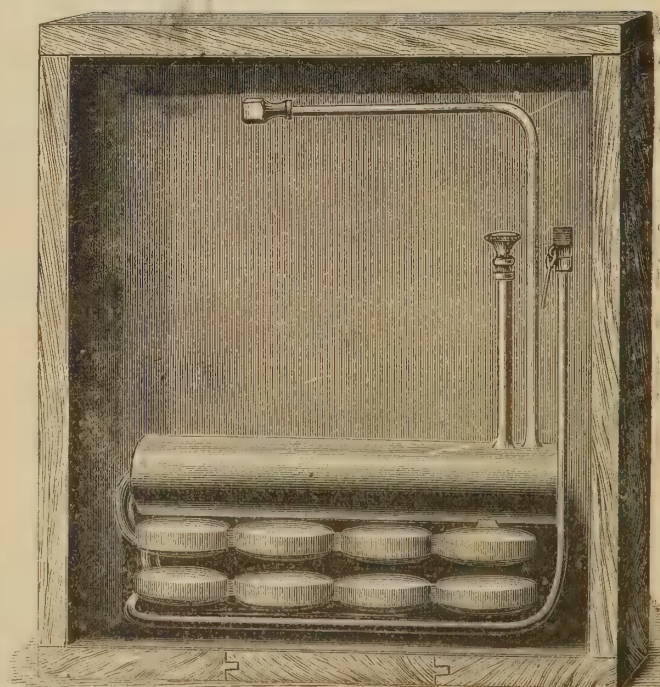
The patent cooler consists of a coil of 8 feet of 6 oz. block-tin pipe, 8 heavy block-tin cells jacketed with copper, and a 17-inch by 3-inch sheet block-tin lined copper cylinder.

The mineral water coolers each consist of a coil and a sheet block-tin lined cylinder. Three supply-pipes are furnished with each cooler ; an inlet pipe 3 feet long, with female coupling and clamp joint ; a short outlet pipe $1\frac{1}{2}$ foot long ; and a long outlet pipe 3 feet long ; each with a male coupling on one end and a female on the other.

SIZE. — Width, 1 foot 8 inches ; height, 1 foot 10 inches.

PRICE.

As shown with patent cooler, length of box 10 in.	\$25.00
With 1 patent cooler and 1 cylinder cooler for mineral-water, length of box 10 in.	33.75
With 1 patent cooler and 2 cylinder coolers for mineral-waters, length of box 15 in.	42.50
With 1 patent cooler and 3 cylinder coolers for mineral waters, length of box 20 in.	51.25
With 1 patent cooler and 4 cylinder coolers for mineral-waters, length of box 24 in.	60.00



ICE AND COOLER BOX,

WITH SYRUP-BOTTLES.

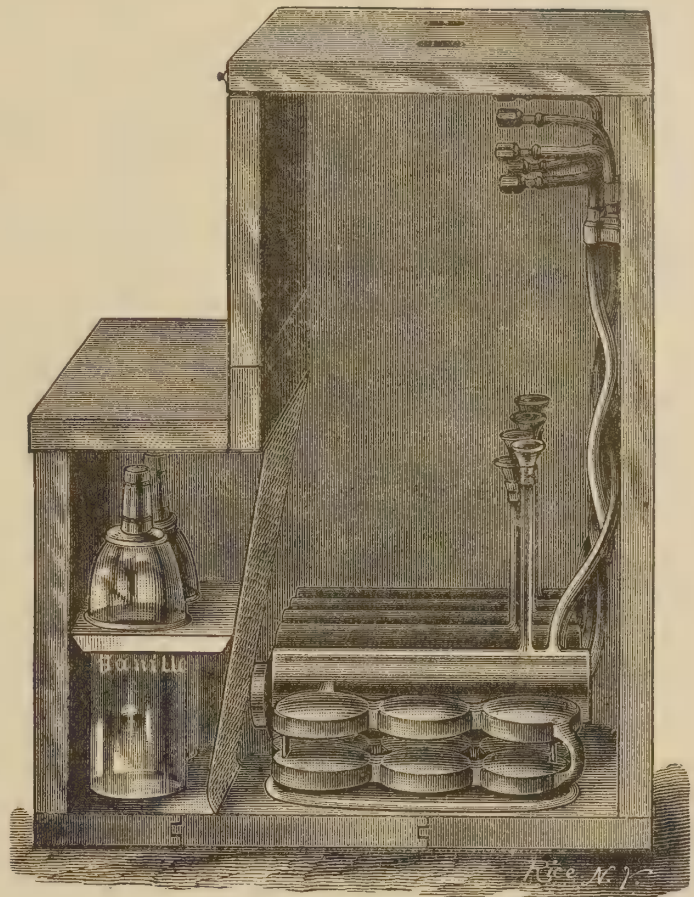
For use with silver-plated counter draught-stands, from which soda-water is drawn.

PRICE.

With one small patent cooler, consisting of a coil of 6 feet of 6 oz. block-tin pipe, 6 cups, and a 12-inch \times 3-inch sheet block-tin lined cylinder.

Cylinder and coil coolers for mineral waters.	Syrup-bottles with names etched in glass.	Length (inches).	Width (inches).	Height (inches).	
3	6	27	20 $\frac{1}{2}$	24	. . \$50
4	8	19	23 $\frac{1}{2}$	24	. . 60
5	10	24	24	24	. . 70
6	12	27	24	24	. . 80

Three supply-pipes are furnished with each cooler. Inlet 3 feet long with clamp-joint and female coupling. Short outlet 1 $\frac{1}{2}$ foot long, and long outlet 3 feet long, each with a male coupling on one end and a female on the other.



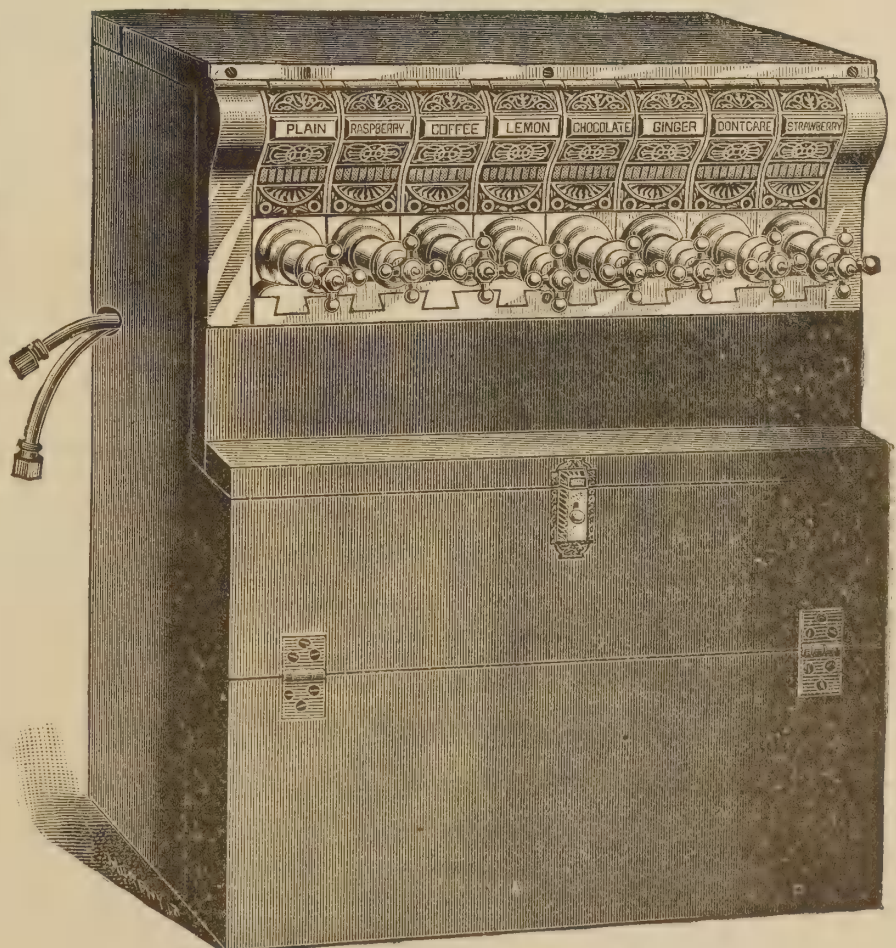
THE SIBERIAN ICE AND COOLER BOX.

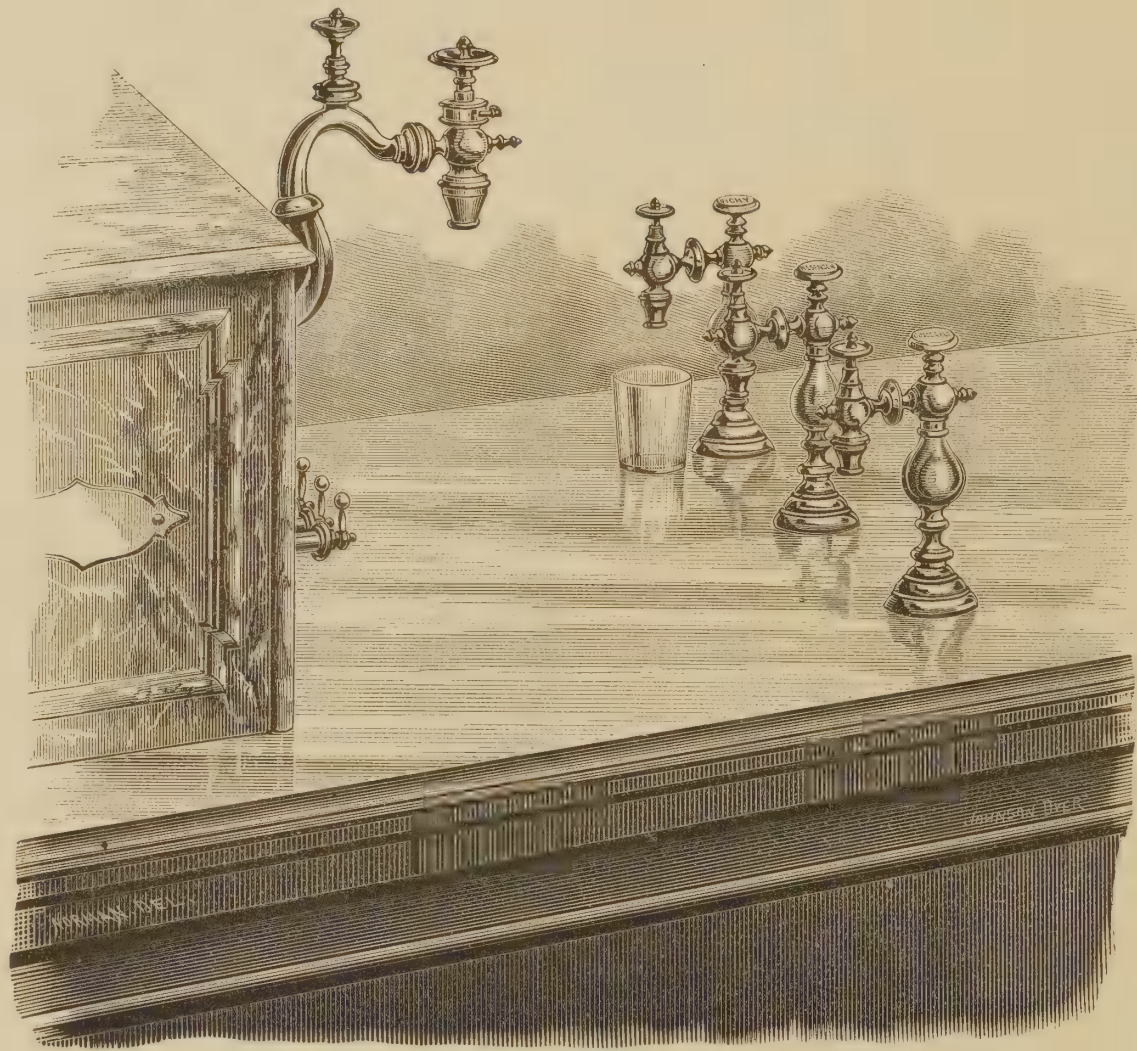
This box is intended for use with the Congress and other silver-plated draught-stands.

It is provided with the patent drawer syrup-tanks either of block-tin or glass as desired. The coolers are arranged as shown in sectional illustration above, and ice is admitted through the door in front.

SIZE. — Length, 24 inches; width, 19 $\frac{3}{4}$ inches; height, 29 $\frac{1}{2}$ inches.

PRICE with 8 syrup-tanks \$140





COUNTER DRAUGHT-TUBES.

THE above cut represents silver-plated draught-tubes, to be connected through the counter, where there is not the requisite number of tubes in the counter-apparatus.

Each tube bears a silver plate engraved with name of the beverage, and is provided with a non-corrosive nozzle. A line of these tubes for the various mineral-waters, ginger-ale, etc., presents a very attractive appearance, and will be found exceedingly convenient.

SIZE. — Height, 13 inches; extreme length, 8 inches.

PRICE.

For each tube, with supply pipe and cooler \$18

ROBBINS' PATENT ATTACHMENT SODA-WATER DRAUGHT-TUBES.

THIS valuable invention can be used in connection with any double-stream draught-tube.

It consists of a long tube of solid silver, and is attached to the double-discharge nozzle of the soda-water tube in such a manner that the large or heavy stream is then introduced at the bottom of the tumbler, and below the contents.

The effect of its use is to produce soda-water without cream, which has all the characteristics of cream-soda.

In point of economy, this tube may be so used as to produce a full glass with one half the quantity of syrup and water without it. The creamy character of the beverage may, however, be retained, and a full quantity of liquid drink furnished if desired.

The use of this tube prevents the unpleasant results of the effervescence throwing the spray into the face while drinking, — an advantage that will be highly appreciated by the ladies.

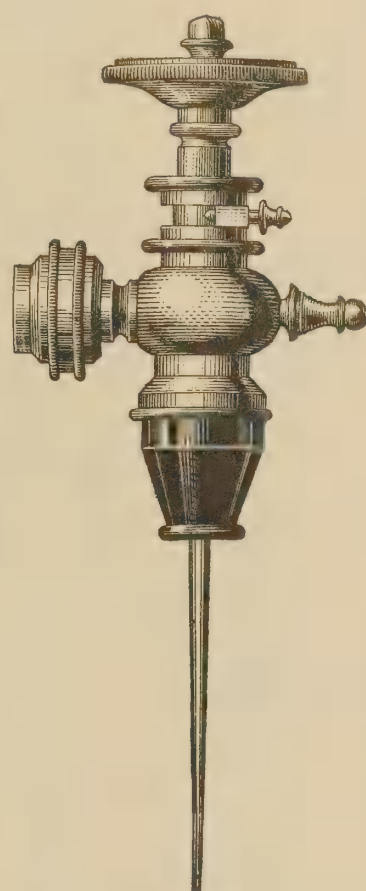
Another peculiarity of this tube is that the water retains the foam for quite a length of time, and a much larger retention of the gas is effected, — thus giving facility for serving it in Ice-Cream Saloons, Restaurants, etc., or allowing it to be carried out to a carriage.

Dealers who have used the tube inform me that their sales have been enormously increased by its use, while the saving of material is very great.

It is extremely neat, simple, and attractive, and can be attached to any draught-tube.

In sending orders for the tube, parties should specify the style of the draught-tube they are using, by quoting the year and page of the Catalogue on which their Apparatus is represented, and whose manufacture it is.

The Robbins' Attachment cannot be used on the patent glass-bulb draught-tube.



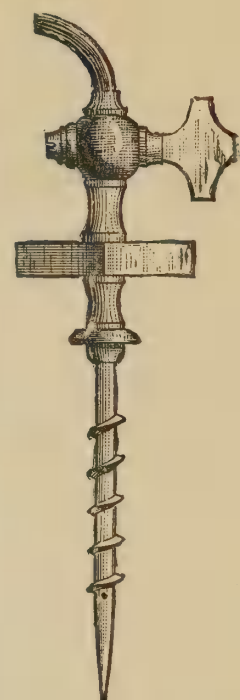
Price, \$5.00.



GEM MUSTACHE AND LIP GUARD.

Adjustable to all styles of tumblers.

	PRICE.	Per dozen.
Nickel plated		\$3.00
Silver „		4.50

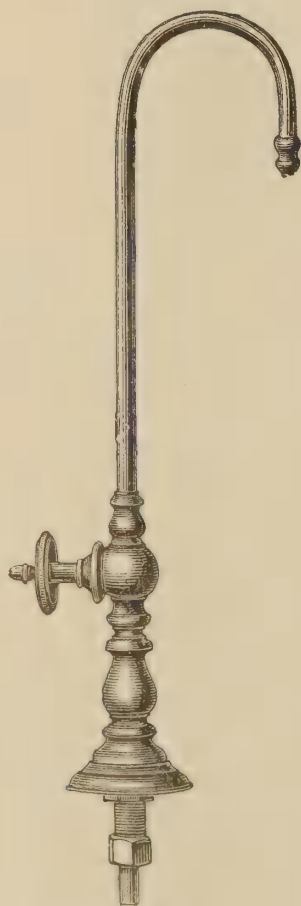


THE NO. 46 CHAMPAGNE TAP.

This tap is well known to the drug trade throughout the country as the best in use. Although never extensively advertised, it has had a very large sale.

It will be found very useful for Koumiss as well as for Champagne, and is a very salable article.

Price, per dozen \$8.75



COUNTER-TUBE.

Counter-Tube, heavily silver-plated, 20 inches high, lined with solid block-tin, including six feet of block-tin pipe and cooler, each \$12.00.



SYRUP-BOTTLE

With silver-plated cap. These bottles are of optic glass, the quaint twisted effect of which gives brilliancy to their appearance.

	Plain.	With name of syrup etched in the glass.
Crystal	\$1.00	\$1.25
Amber or blue	1.25	1.50
Ruby	1.75	2.00



ESSENCE-BOTTLE.

Blown glass, handsomely cut, with silver-plated squirt-tube, \$1.00 each.

Extra squirt-tubes, each . . . 20 cents

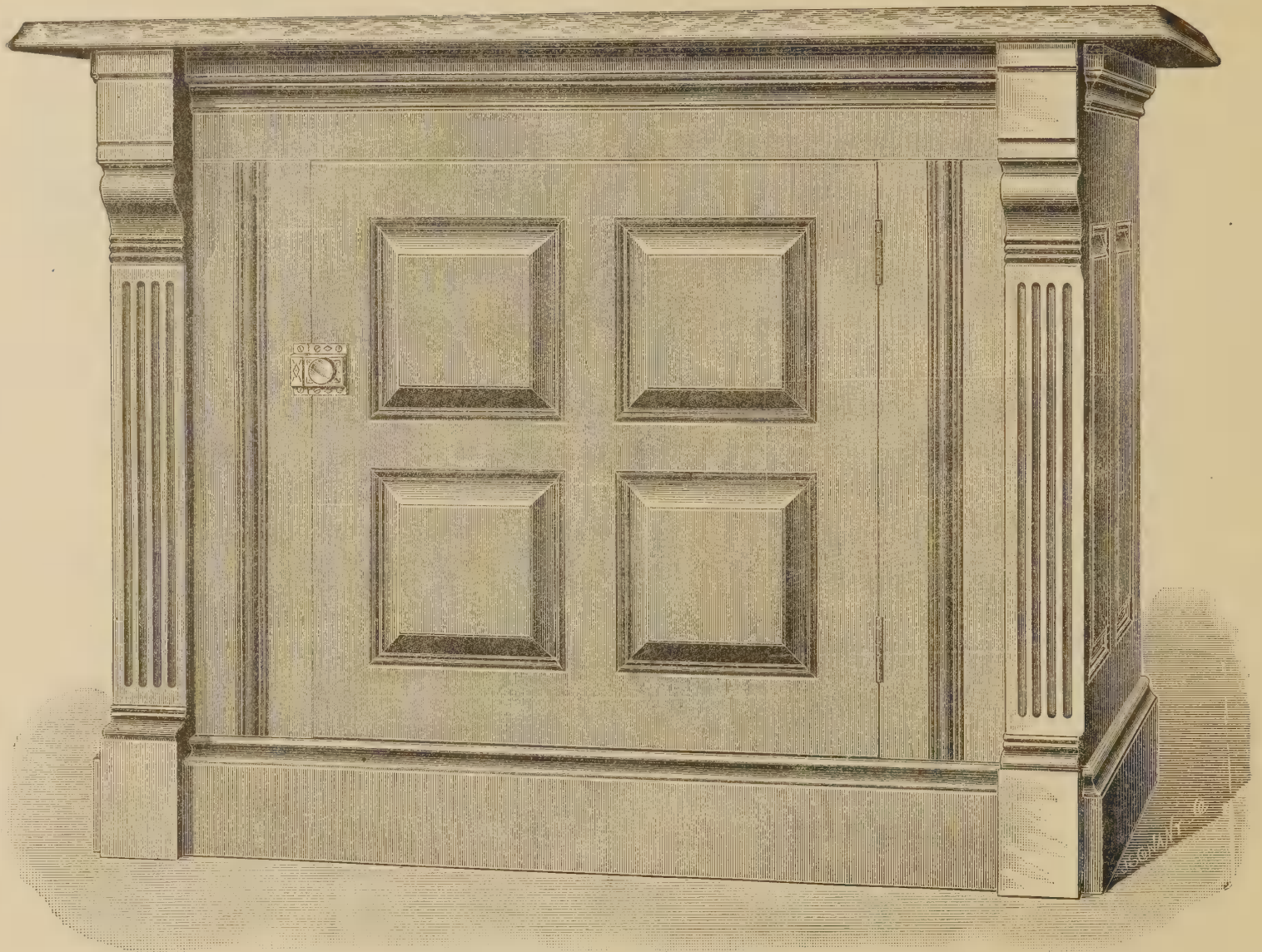


COMBINED WATER ATTACHMENT AND GAS FIXTURE.

THIS attachment can be furnished for any new apparatus upon which it is possible to place it.

PRICE.

When placed upon an apparatus the price of which does not include either a gas or water fixture	\$75.00
When replacing a gas-fixture, the extra price is	50.00
When replacing a water attachment, the extra price is	25.00



COUNTERS FOR WALL APPARATUS.

A SUBSTANTIAL, HANDSOME, AND MODERATE-PRICED COUNTER.

The illustration represents a strong, double-walled counter, which is lined throughout with copper and zinc, and can be used as a refrigerator for bottled beverages or any goods which it is desired to keep cold.

Convenient access is had through the ample outer and inner doors. The inner doors are hinged to open downward from the top, and the openings are about one third the size of the outer doors.

The counters are thoroughly built and handsomely finished, the doors being neatly panelled.

PRICE.

In ash, oak, cherry, ebonized cherry, or mahoganized cherry, with white Italian marble slab $1\frac{1}{2}$ inch in thickness.

Length, 6 feet ; width, 2 feet 2 inches ; height, 2 feet 10 inches	\$150
Length, 3 feet 4 inches ; width, 2 feet 2 inches ; height, 2 feet 10 inches	100

The above-mentioned lengths are suitable for the Orleans and Dominion, and similar apparatus. Special lengths can be made to order at the following prices : —

Lengths greater than 6 feet	\$25 per foot.
Lengths less than 6 feet	30 per foot.

MARBLE SLABS FOR COUNTER-TOPS.

EQUAL care is used in furnishing the marbles for counters as is exercised in the selection of those for the construction of the Arctic; and dealers desiring counter-slabs will be supplied with the very best quality of imported marble, highly polished, and at a reasonable price.

In ordering, be particular to send diagram, and, if possible, a paper pattern of exact outline of slabs needed, indicating which side is the top, giving instructions as to polishing the edges; whether the half-round or moulded edge is wanted; whether the end is to be left square to meet another slab; whether the corners at the outer end are to be rounded off; also where the soda-water apparatus or tumbler-washer is to be placed, that the suitable holes may be made.

In measuring marble, the invariable rule is to measure all polished surface: thus, if a slab $\frac{7}{8}$ inch thick be two feet wide, and polished on each edge, the measure would be two feet and two inches, thus measuring from *under side to opposite under side*.

It should be borne in mind that moulding the edge of a slab lessens the top measurement about $1\frac{1}{4}$ inches. An apparatus 24 inches long requires a slab 26 inches wide, which will be $24\frac{3}{4}$ inches wide on top, the ogee moulding lessening the top measurement $\frac{5}{8}$ inch at each edge.

Again, in relation to marble which is curved, or cut at sharp angles, owing to waste of stock, the measurement is made by squaring the whole outline.

The above custom is mentioned to avoid misunderstanding.

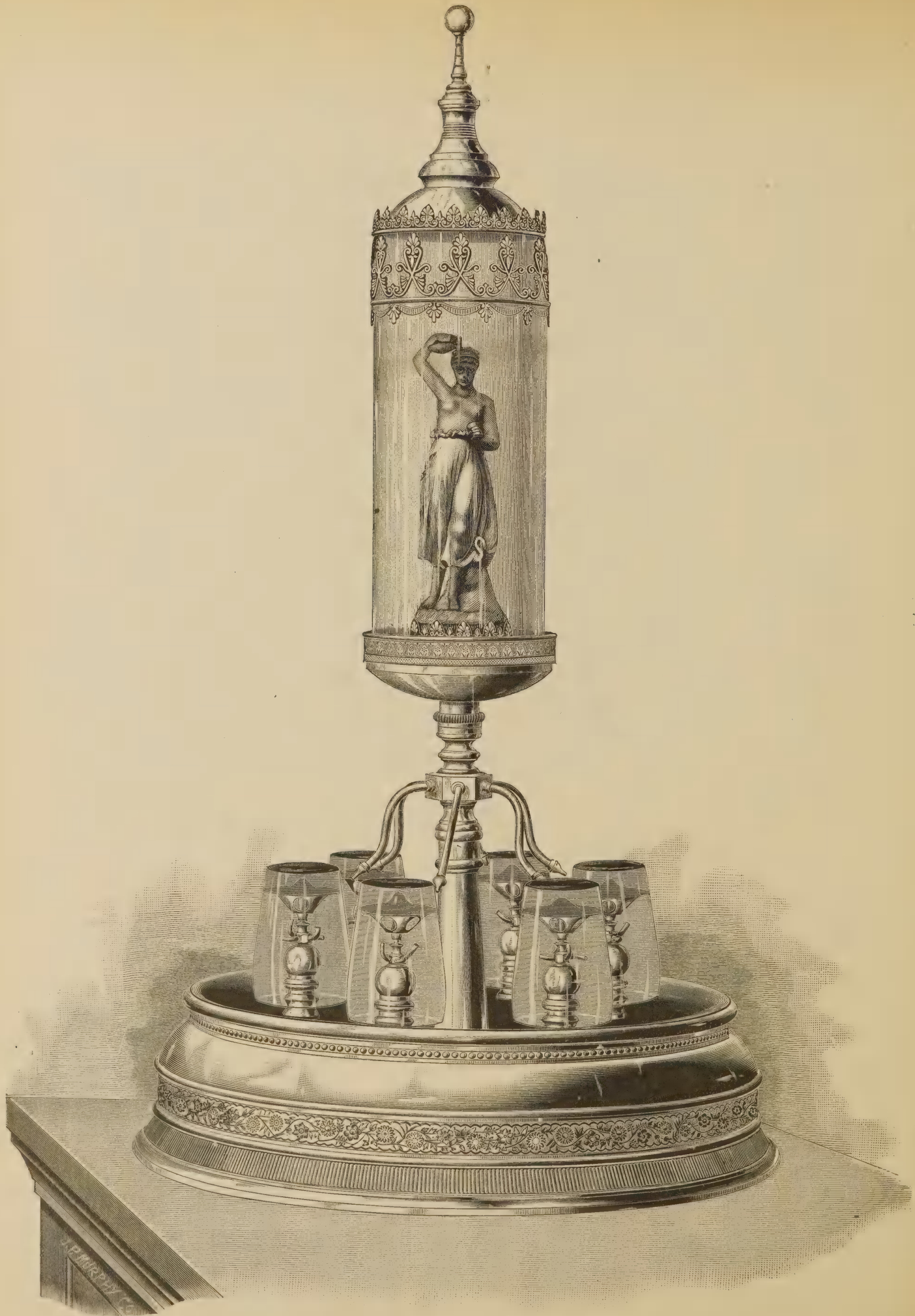
White Italian and Sevier are the only desirable marbles for use in counter-slabs.

PRICE PER SQUARE FOOT.

	White.	Sevier.
$\frac{7}{8}$ inch thick	\$1.00	\$1.25
$1\frac{1}{4}$ " "	1.40	2.00
$1\frac{1}{2}$ " "	2.15	2.75
2 " "	2.65	3.60

No charge for boxing or teaming.

Caution.—No colored marbles except Sevier are adapted for slabs. Only the best quality of white Italian marble should be used for this purpose; but some marble-dealers, through ignorance or economy, use a soft, porous marble, totally unsuited to this use. Such slabs are dear at any price.



THE MAELSTROM, No. 1.

WITH DOME WATER-FOUNTAIN, AND NEW STYLE HIGH SILVER BASIN.

(Patented.)

THE MAELSTROM, No. 1.

(NEW PATENT REVOLVING TUMBLER-WASHER.)

FOR beauty, simplicity of construction, and satisfactory operation, this washer is superior to any which has preceded it.

It has been thoroughly tested by practical use, and in the hands of both experienced and inexperienced operators has given entire satisfaction.

It differs from all tumbler washers heretofore made in the following points:—

- 1. It is more elegant in design.
- 2. The outer streams have very little force.
- 3. The tumblers are revolved by the inside streams.
- 4. The direction of the inner streams cannot be changed.
- 5. Each standard is provided with a regulator, which has no spring and requires no adjustment.
- 6. Each standard is provided with a strainer.
- 7. The fountain jet makes a penetrating but not disagreeable sound.

The construction of the Maelstrom is upon an entirely new principle. While retaining all the advantages of the older styles, it is free from all adjustments. When once placed in position the only attention needed is to keep the strainers free from obstructing matter. This can readily be done, as each standard is supplied with a strainer.

As the tumblers are run by the inner streams, and the direction of these streams cannot be changed, it can be readily seen that the tumblers cannot in any event fail to revolve.

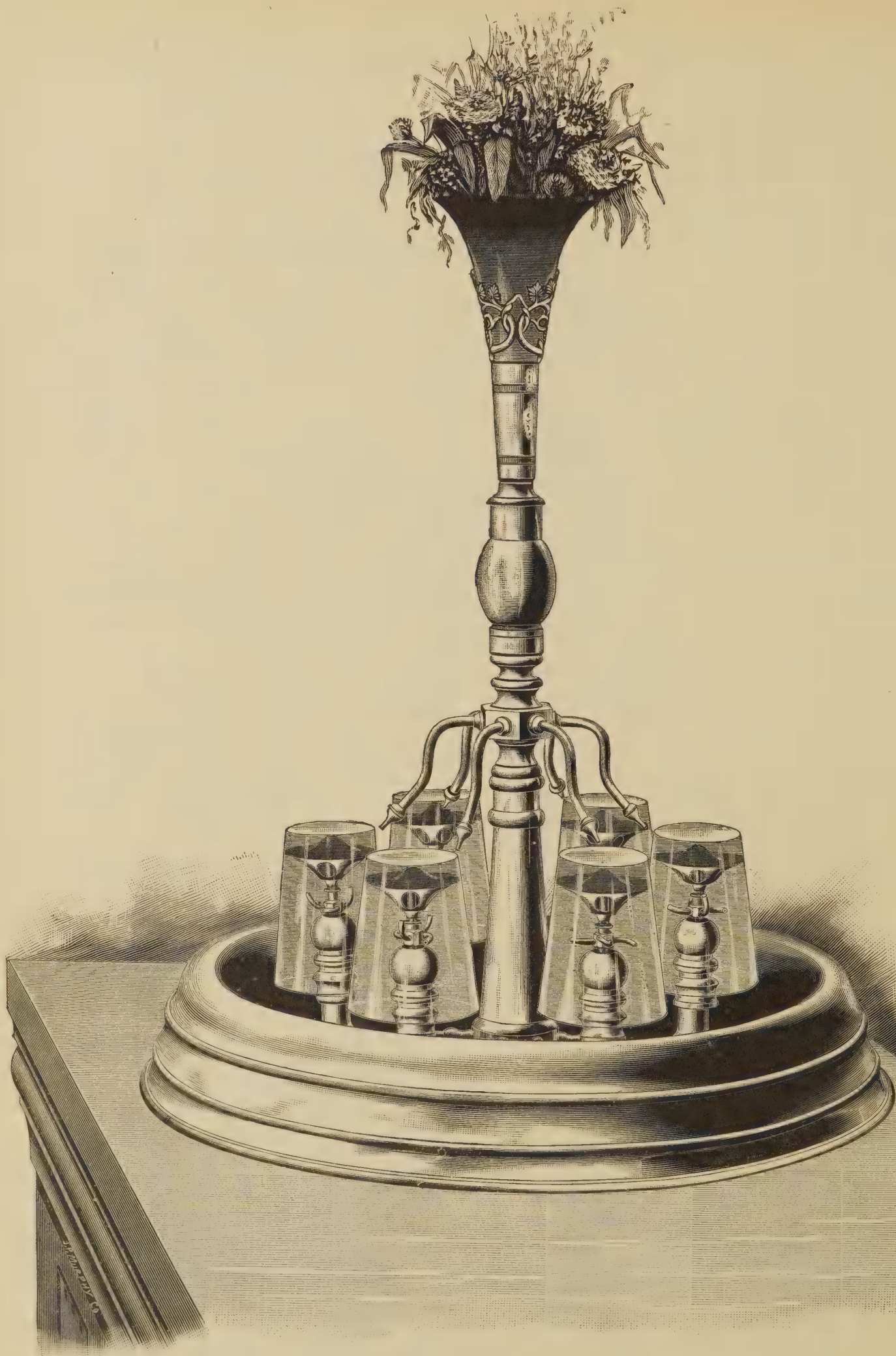
Every one who has operated a tumbler washer is aware of the tendency of the tumblers to rise up, and the valves to close, when the ever varying pressure, for any reason (such as the removal of two or three tumblers, or the closing of a neighboring faucet), is suddenly increased. In the new washer this lifting of the valve opens another similar valve, on the same spindle, allowing the surplus pressure to escape; consequently the tumblers neither cease revolving nor revolve too rapidly.

The force of water applied to the exterior of the tumbler is very much less in the Maelstrom than in preceding washers, and the spattering of water over the edge of the basin upon the counter is entirely prevented. The volume of water is, however, sufficiently copious thoroughly to rinse the exterior of the tumbler.

But a small amount of water being necessary to run this washer, owing to the fact that the outside streams are supplied by one pressure jet instead of six, almost the entire force can be turned on to the fountain jet, thereby producing the ringing sound which is so much desired. The glass dome in this washer rests upon knife edge brackets, and its maximum vibration is thereby obtained.

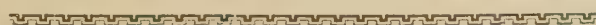
SIZE. — Diameter of high basin, 1 foot 10 inches; diameter of holes required, 2 inches each, 3 3/4 inches apart, measuring from centre to centre; height with dome water fountain, 3 feet 1 inch; height with globe water fountain, 2 feet 6 inches; height with bouquet holder, 2 feet 2 inches.

	PRICE.		
	Marble basin.	New High Silver basin.	Plain High Silver basin.
With dome water-fountain	\$130.00	\$120.00	\$115.00
With globe water-fountain	130.00	120.00	115.00
With bouquet-holder	105.00	95.00	90.00



THE MAELSTROM, No. 2.

WITH BOUQUET-HOLDER AND PLAIN LOW SILVER BASIN. (Patented.)



THE MAELSTROM, No. 2.

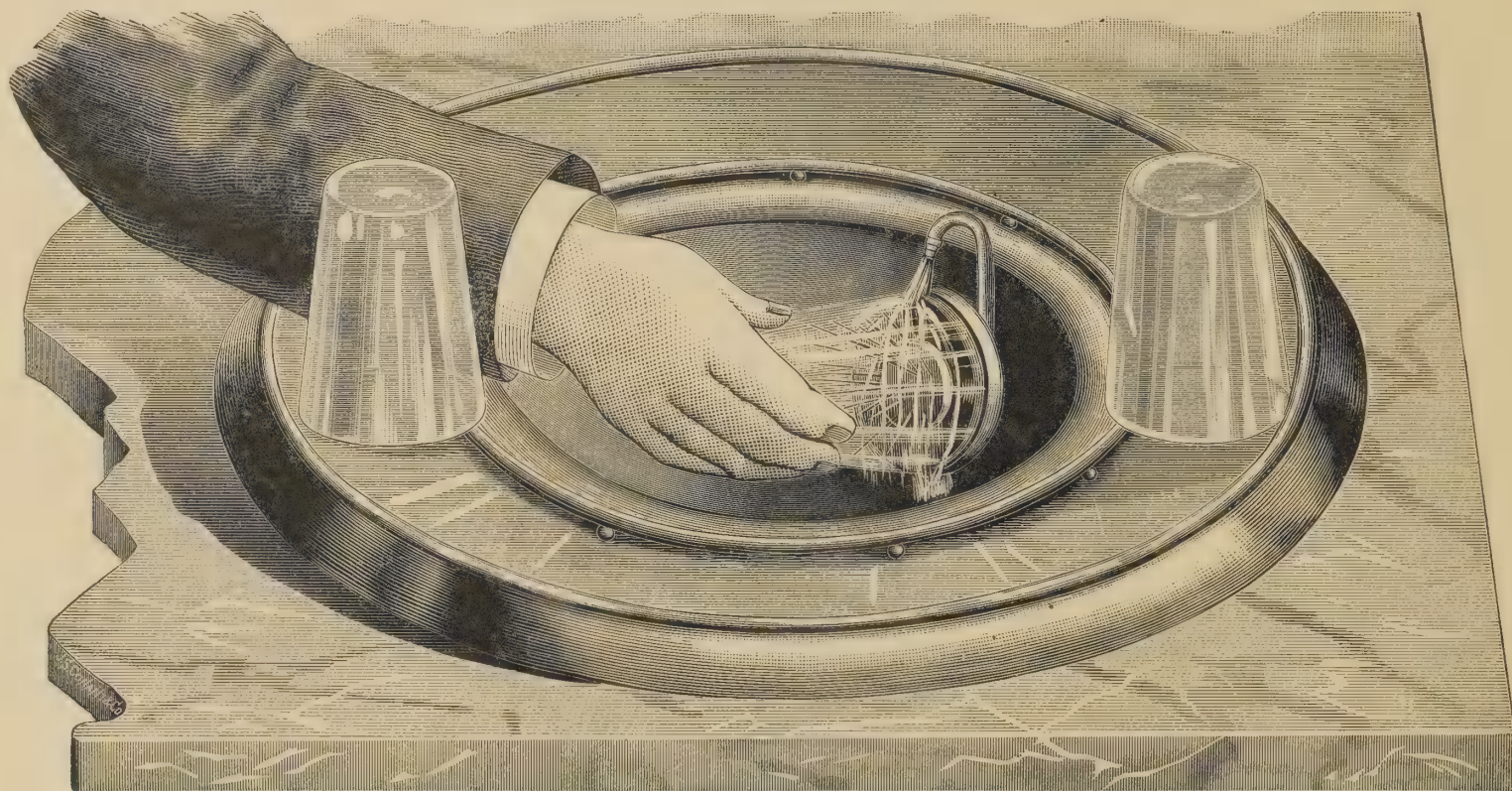
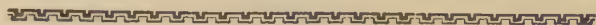
(NEW PATENT REVOLVING TUMBLER-WASHER.)

THE No. 2 Maelstrom differs from the No. 1 only in having a low basin. It is made in the same three styles as the No. 1, viz., with dome water-fountain, and with globe water-fountain, and with bouquet-holder as shown; and the working parts are exactly the same.

SIZE.—Diameter of low basin, 1 foot 9 inches; diameter of hole required, 1 foot 4 inches; height with dome water-fountain, 2 feet 11 inches; height with globe water-fountain, 2 feet 4 inches; height with bouquet-holder, 2 feet.

PRICE.

As shown, with plain, low silver basin and bouquet-holder	\$75
“ “ “ “ dome water-fountain . . .	100
“ “ “ “ globe “ “ . . .	100



THE SCYLLA TUMBLER-WASHER.



THIS old style of tumbler-washer in numerous, cheap, and flimsily constructed forms has sprung into favor during the past two seasons, and the Scylla is offered to supply a better and more substantial article.

The washer is simple and inexpensive, and rinses the tumbler thoroughly and expeditiously.

It consists of a silver bowl which is fitted, in the usual manner, to a hole of the proper size in the counter slab, and a drainer upon which the rinsed tumbler can be placed.

In the side of the bowl is a valve, which is opened by simply pressing the tumbler against it, and which delivers a large number of forcible jets inside and a copious stream without force on the outside of the tumbler, thoroughly rinsing it.

The favorable impression created by washing tumblers in sight of the customer is well known.

SIZE. — Diameter of drainer, 1 foot 8 inches ; diameter of interior of basin, 11 $\frac{5}{8}$ inches ; depth of basin, 6 $\frac{1}{2}$ inches ; diameter of hole in slab, 11 $\frac{3}{4}$ inches.

PRICE.

As illustrated and described, with drainer	\$50
Without the drainer	30

THE
WHIRLPOOL TUMBLER-
WASHER.

THIS tumbler-washer is designed to occupy but small space on the counter, and to be used with convenience and rapidity.

It is arranged to be operated either by the foot or the hand, as desired. An air-chamber prevents hammering when the valve closes.

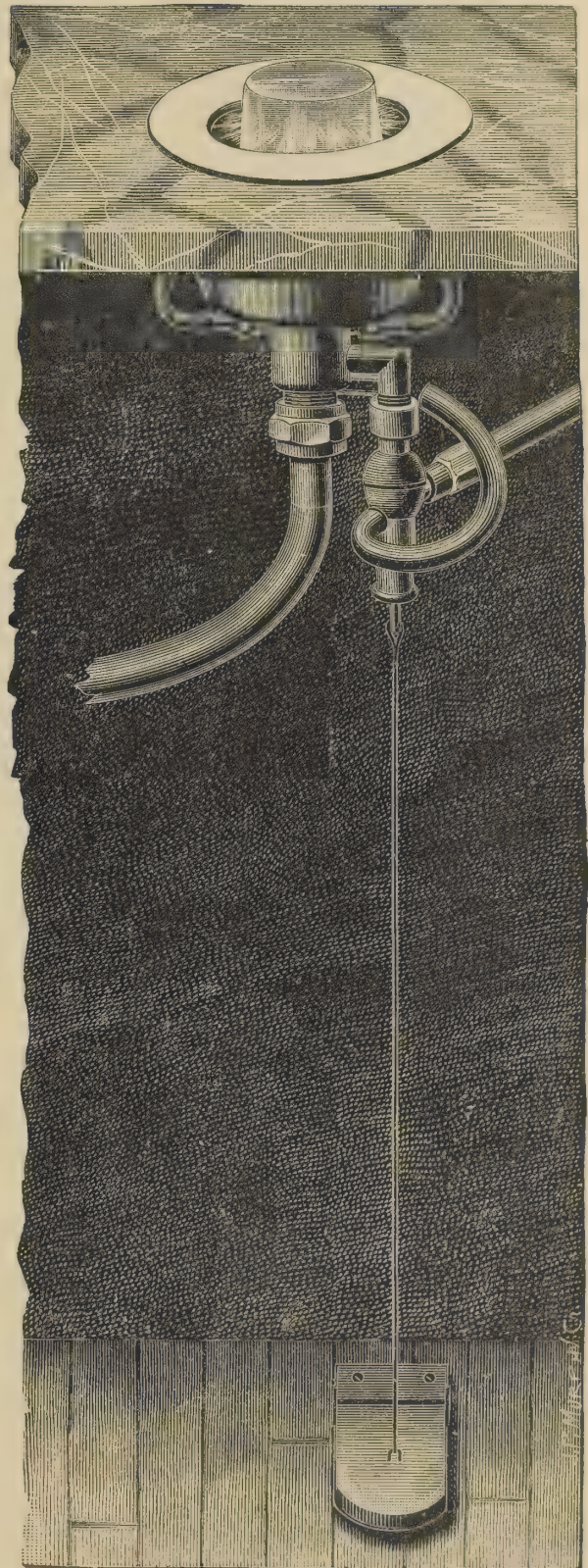
The tumbler is thoroughly and quickly rinsed, inside and out, by a large number of copious and forcible jets of water.

The valve is closed by a spring the moment the pressure of the foot on the treadle is released.

When arranged for operation by hand, the valve-stem is made to pass upward through the counter slab, and a slight pressure of the hand is sufficient to open the valve.

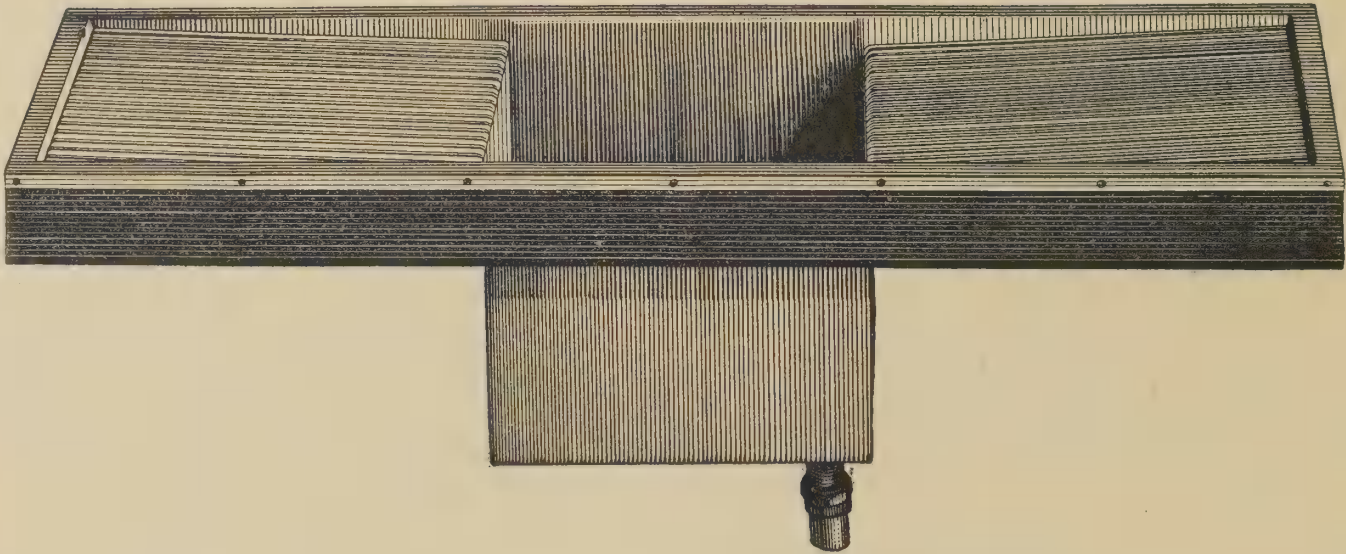
Size of hole required in slab $5\frac{5}{8}$ inches in diameter.

Price \$15



THE WHIRLPOOL.

ARRANGED TO BE OPERATED BY
THE FOOT.



CORRUGATED TINNED COPPER TUMBLER DRAINER.

THIS drainer and sink, when placed under the soda-water dispensing counter, is of the greatest convenience.

It consists of a wood frame covered with heavy sheet copper, and is light and easily removed when necessary for cleaning, and being well tinned is free from corrosion.

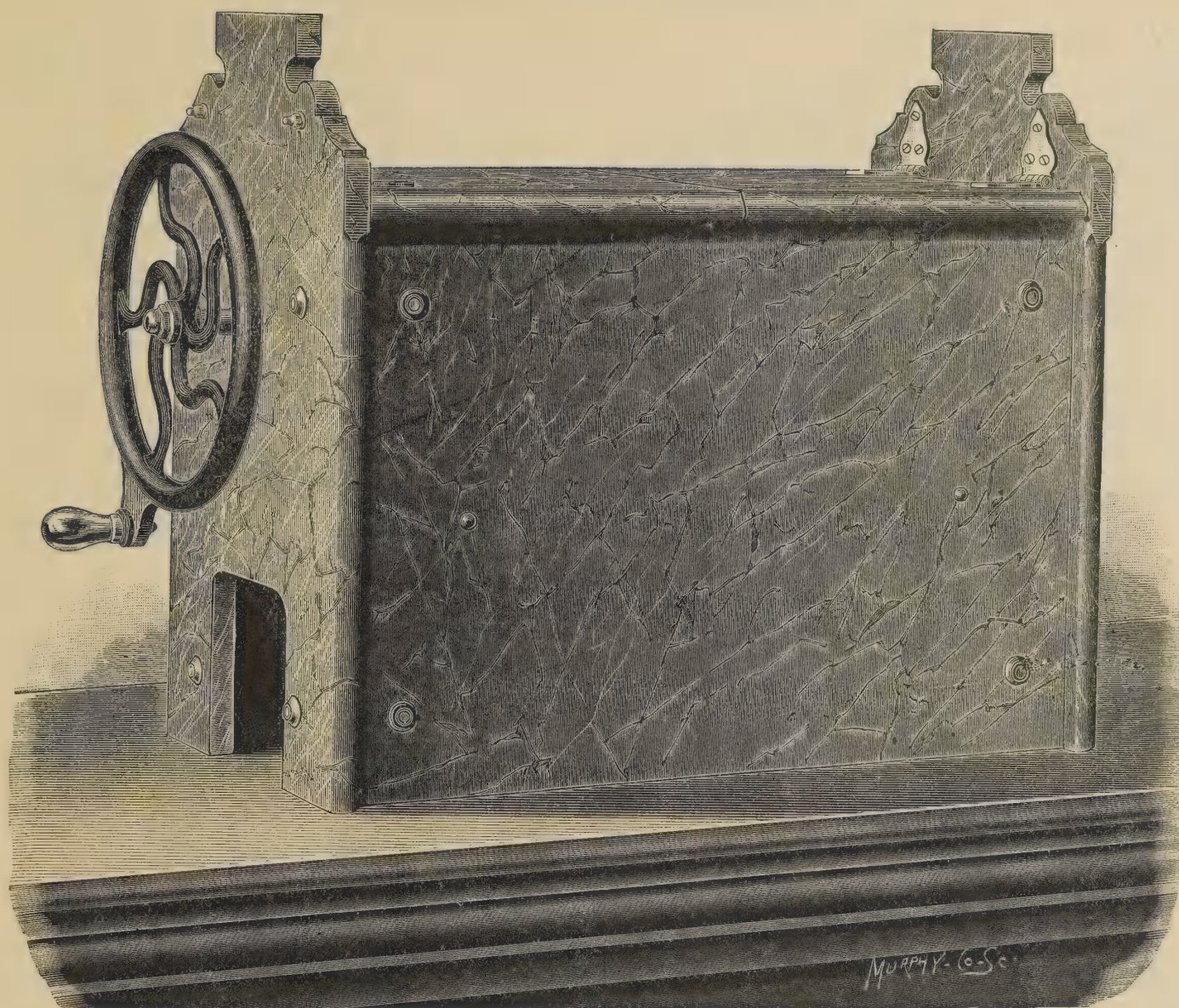
The sides of the drainer are inclined, so as to deliver into the basin. The basin is supplied with a standing waste-pipe, which can be lifted and removed to empty the basin.

A water-faucet should be placed over the basin if possible.

PRICE.

1 foot 2 inches wide, with basin 10 inches long, 1 foot wide, and 1 foot deep.

Length, 3 feet 6 inches	\$10
4 feet	12
4 feet 6 inches	14



IMPROVED ICE SHAVER, NO. 2.

THIS Ice Shaver is made on an old and approved principle. The ice is placed in a horizontal box, the barrel which carries the planer knives revolves vertically, and the ice is forced forward against the knives by a follower, carried by a screw gear revolved by a wheel. This follower can be readily pushed back when necessary to replenish ice. The construction is simple, readily understood, and a child can operate it. The shaver will hold a considerable piece of ice, will receive and cut an irregular-shaped piece, and produce *snow*. It will give complete satisfaction. The wheel can be arranged to revolve either with the right or left hand.

No. 2 Style.

SIZE. — Length, 27 ½ inches ; width, 13 ½ inches ; height, 23 ½ inches.

PRICE.

In Hessian or Rouge Royal marble	\$75
In black or Italian Bardiglio marble	85

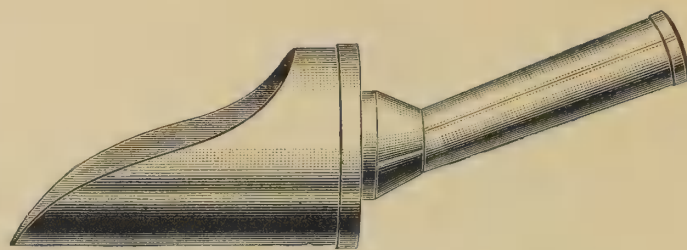
No. 1 Style.

Similar in shape to Style No. 2, illustrated above ; but ends do not project above cover.

SIZE. — Length, 27 inches ; width, 12 inches ; height, 20 inches.

PRICE.

In Hessian or Rouge Royal marble	\$70
In black or Italian Bardiglio marble	80



ICE SCOOP.

Price, nickel-plated, 9 inches long \$1.00

ICE VASE.

(Silver-plated.)

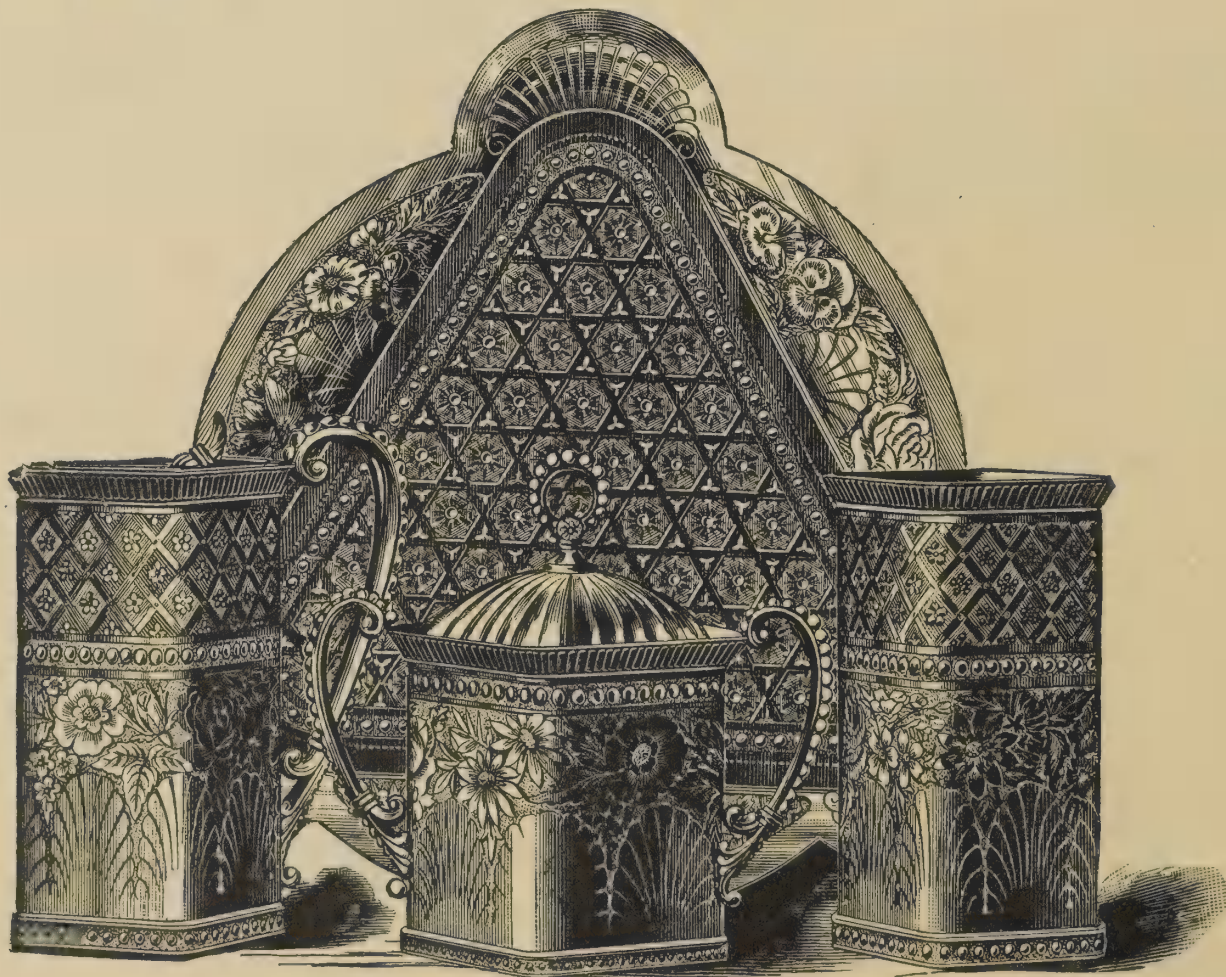
THIS receptacle for cracked ice, used in making soda-water beverages, presents a most attractive appearance on the counter, and is a means of largely increasing the demand for cold drinks. It is provided with a faucet for drawing off the ice-water.

The cover is hinged in such a manner that two thirds of it is raised when open.

PRICE.

With single wall, without cover	\$15.00
With single wall and hinged cover	18.00
With double wall and hinged cover	30.00

Height, 12½ inches.



NO. 2215 SILVER SET FOR THE SODA-WATER COUNTER.

PRICE.

Complete	\$15.00	Spoon-holder	\$3.00
Tray	4.50	Rochelle bowl	3.75
Cream-pitcher, to hold 1 pint	3.75		



SILVER-PLATED PITCHER, FOR BEER AND GINGER-ALE.

IN dispensing beer or ginger-ale it is necessary, on account of the froth, first to pour a portion of the solid liquor from a pitcher, and then draw the balance from the apparatus.

I furnish Silver-Plated Pitchers, made expressly for this purpose, which draw from the bottom. Price, gallon size, \$7 each ; one half gallon size, \$5 each.



GERMAN-SILVER SHAKER.

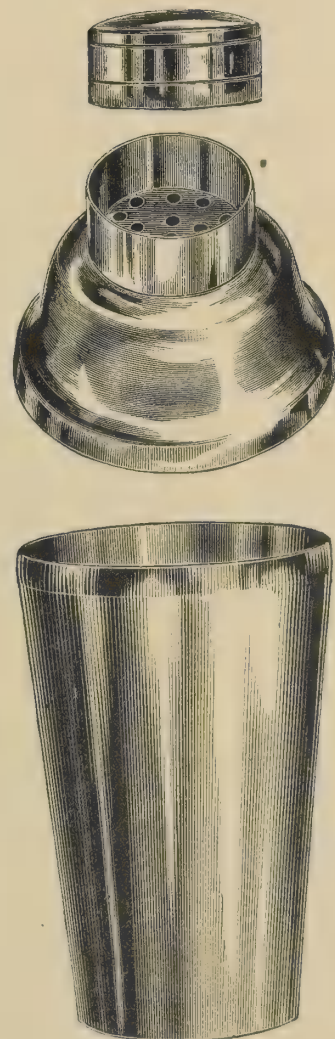
Price, \$4 each. Free from liability of metallic contamination, the base metal being pure, and the silver not stripping by contact with acid.



BOTTLE HOLDER FOR GINGER ALE.

PRICE.

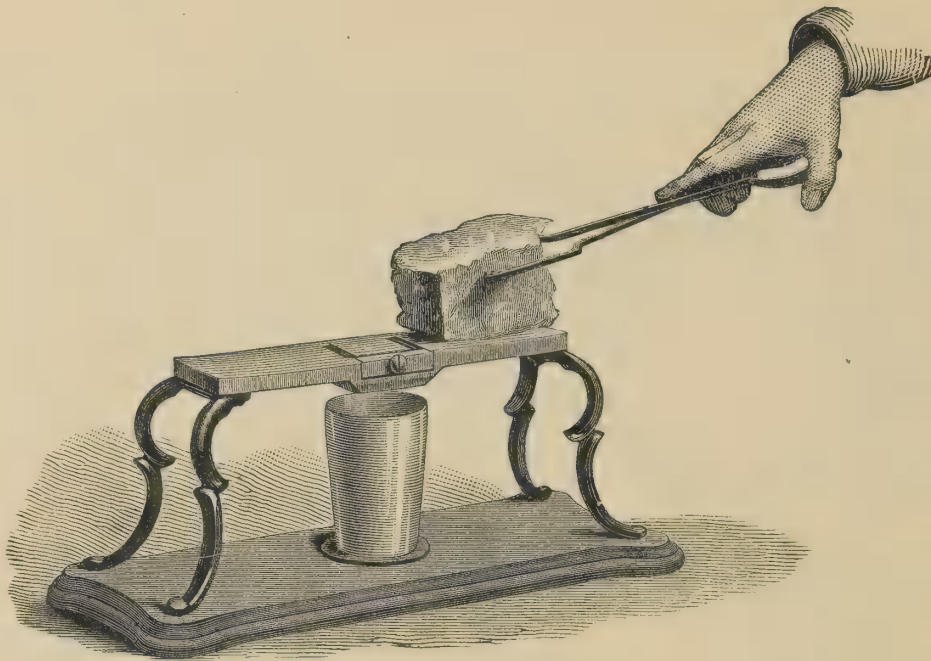
Silver plated \$1.50



EGG PHOSPHATE SHAKER. (Patented.)

PRICE.

Nickel plated \$2.25 each.
Silver plated 3.00 each.



ICE PLANE, WITH TONGS.

Price \$5.00



CREAM PITCHER,
WITH COVER.

1 pint \$3.50
1 quart 4.25

Milk Pitcher, with cover,
2 quarts \$6.00



LEMON-SQUEEZER.

Price \$1.25



SUGAR BOWL.

Imported Bohemian Violet Glass, decorated, with rim, covers and handle of silver plate. The covers are hinged in the middle. Diameter, $9\frac{1}{2}$ inches; height, 8 inches.

PRICE \$6.00

ROCHELLE SODA

AND

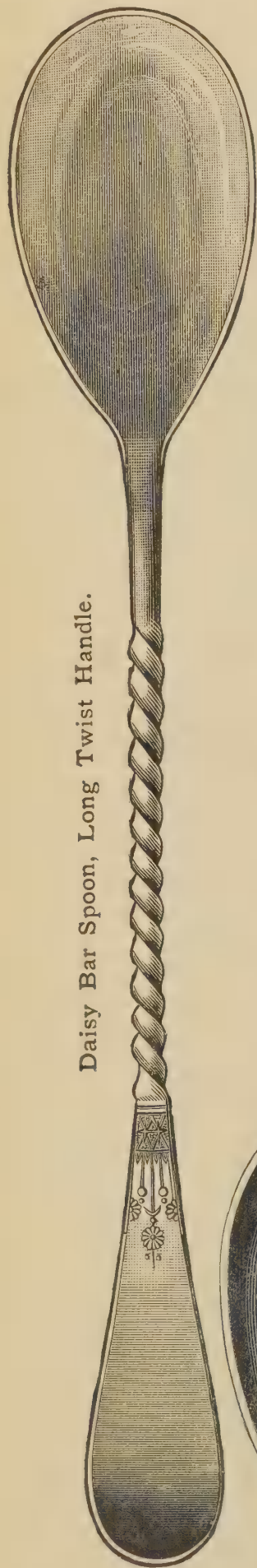
ACID BOWLS.

A stand, with two bowls, for holding Rochelle Soda and Acid. These are set in a stand with a handle, on which the spoon is hung, the whole being heavily plated with silver. It will be found an article of great convenience, as well as an ornament to the soda counter.

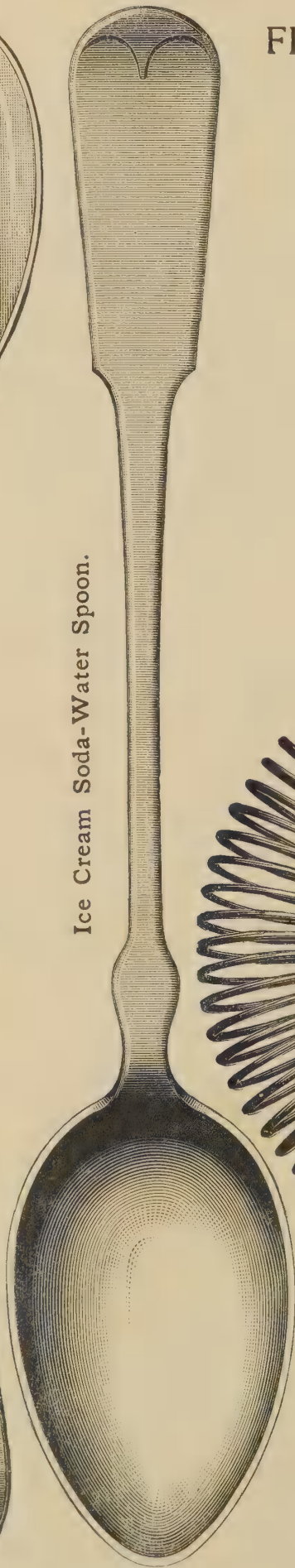
PRICE (complete, with
• spoon) \$6.00



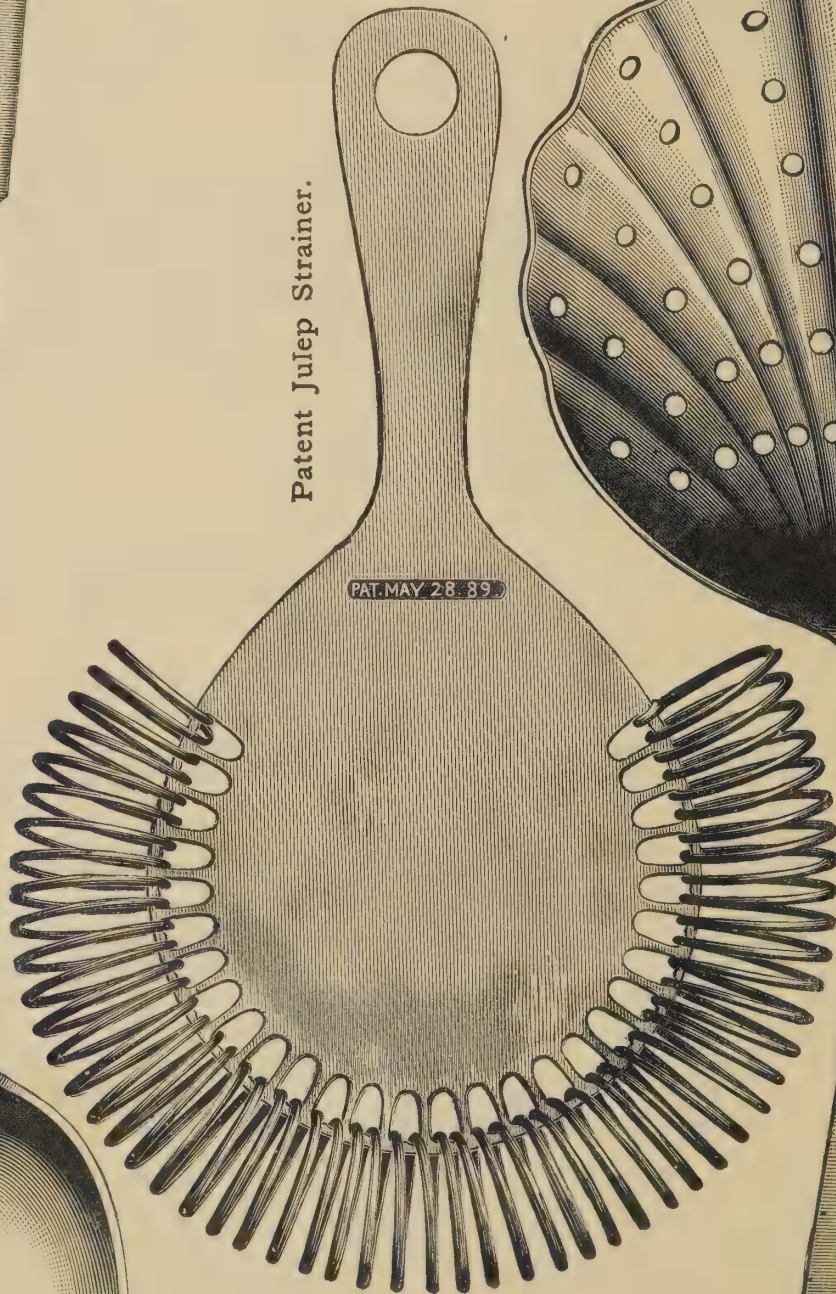
FINEST ELECTRO SILVER-PLATED WARE.



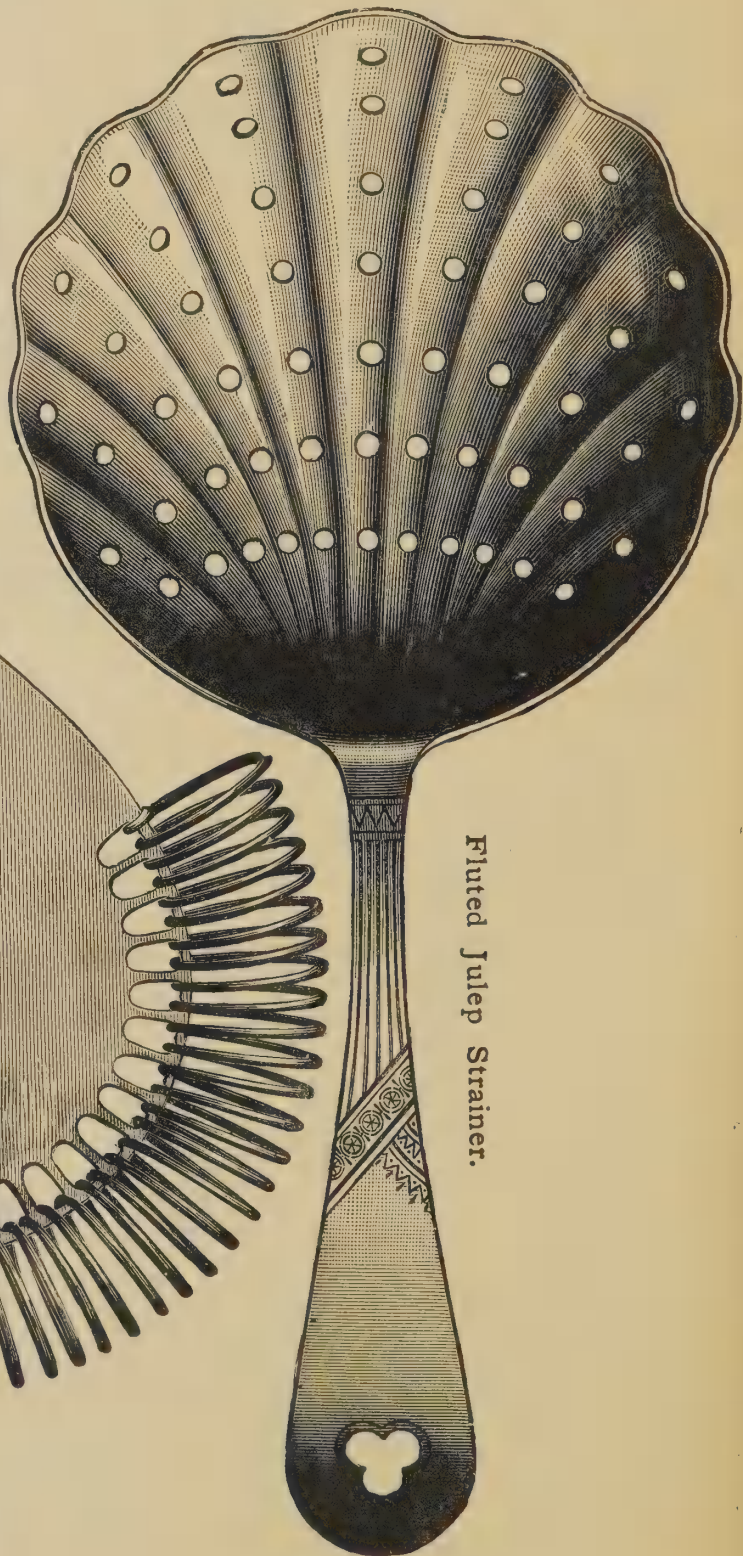
Daisy Bar Spoon, Long Twist Handle.



Ice Cream Soda-Water Spoon.



Patent Julep Strainer.



Fluted Julep Strainer.

EIGHTEEN PER CENT NICKEL SILVER METAL BASE.

YELLOW LABEL. EXTRA PLATE. A 1.

	Per dozen
Daisy Bar Spoons, Short Twist Handle, $5\frac{1}{8}$ inches long	\$4.50
Daisy Bar Spoons, Long Twist Handle, 7 inches long	5.00
Windsor Bar Spoons, Short Twist Handle, $5\frac{1}{8}$ inches long	4.50
Windsor Bar Spoons, Long Twist Handle, 7 inches long	5.00
Ice-Cream Soda-Water Spoons, Long Tipped Handle, 7 inches long	7.50
Julep Strainers, Fluted Bowls, Angelo Handle	9.00

Plated on superior quality eighteen per cent nickel silver metal.

PURPLE LABEL. SECTIONAL PLATE. XIV.

Patent Julep Strainer	\$9.00
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JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.



TUMBLER-HOLDER NO. 1.
Elegantly engraved. \$10 for set of 6.



TUMBLER-HOLDER NO. 2.
\$6 for set of 6.



TUMBLER NO. 3.
\$1.25 per dozen. To hold 11 ounces.



TUMBLER NO. 4.
\$1.00 per dozen. To hold 11½ ounces.



TUMBLER-HOLDER, STYLE A.
\$8 for set of 6.



TUMBLER-HOLDER, STYLE B.
Elegantly engraved. \$12 for set of 6.



TUMBLER-HOLDER, STYLE C.

Price, \$6 for set of six.

This holder will fit only the No. 5 tumbler.

TUMBLER NO. 5.

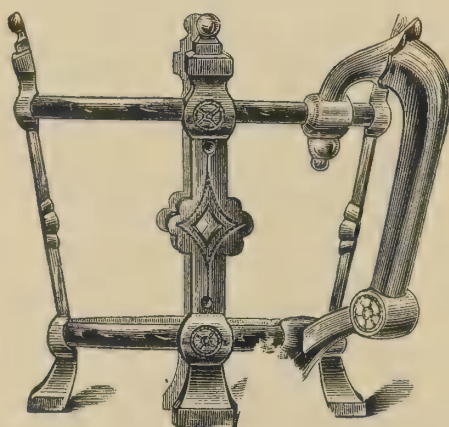
To hold 9 ounces. Price, \$1.00 per dozen.

This tumbler is of French blown glass, and very thin.



TUMBLER-HOLDER, STYLE D.

Elegantly engraved. \$10 for set of six.



TUMBLER-HOLDER, STYLE E.

\$10 for set of six.



TUMBLER-HOLDER, STYLE F.

Elegantly engraved. \$15 for set of six.



TUMBLER-HOLDER, STYLE G.

\$7 for set of six. This holder can be used only with tumblers Nos. 6, 9, and 12.

TUMBLER NO. 6.

To hold 6 ounces. \$1.00 per dozen.

This tumbler is of French blown glass, and very thin.

TUMBLER NO. 9.

To hold 6 ounces. \$1.00 per dozen. Thick glass.



TUMBLER-HOLDER, STYLE K.

Price, \$10 for set of six.

This holder will fit only the No. 7 and 11 tumblers.

TUMBLER NO. 7.

To hold 11 ounces. Price, \$1.00 per dozen.



TUMBLER-HOLDER, STYLE L.

Price, \$10 for set of six. This holder will fit only the No. 7 and No. 11 tumblers.

TUMBLER NO. 7.

To hold 11 ounces. Price, \$1.00 per dozen.



TUMBLER-HOLDER, STYLE L.

\$10 for set of six. This holder will fit only tumblers Nos. 7 and 11.

TUMBLER NO. 11.

I have recently had made abroad a new tumbler of ruby-crystal (upper part ruby and lower part crystal). As a novelty it will doubtless be appreciated. It holds 10 ounces, and will fit styles L and K tumbler-holders, and no others. \$1.75 per dozen.



TUMBLER-HOLDER, STYLE M.

Price, \$10 for set of six.

TUMBLER NO. 8.

To hold 14 ounces. \$1.50 per doz. This tumbler is of French blown glass, and very thin.

TUMBLER NO. 10.

To hold 11½ ounces. This tumbler is French blown, and very thin, but has a thick bottom. It is apparently as large as a No. 4 tumbler, and fits all regular size holders. Price, \$2 per dozen.



TUMBLER-HOLDER, STYLE O.

A convenient and serviceable style, with hard metal handles. Price, \$8 for set of six.



TUMBLER-HOLDER, STYLE P.

\$7 for set of six. This holder will fit only tumblers Nos. 6, 9, and 12.

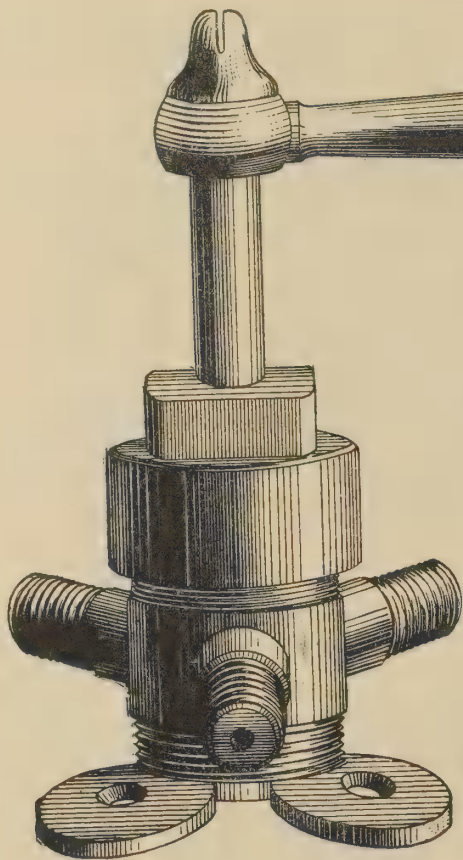
TUMBLER NO. 12.

French blown glass, very thin. To hold 7 ounces. \$1.00 per dozen.



CHANGE STAND.

Price, \$2.50.



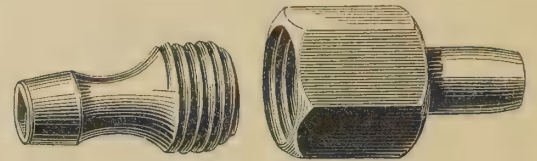
TWO-WAY COCK.

Lined throughout with block-tin pipe.

For connecting two fountains with the supply-pipe for soda. By use of this cock the dealer has but to turn a lever under the counter, and the contents of a second fountain of water immediately run into the apparatus, thus saving valuable time when there are customers waiting. By turning the lever in a third direction, the contents of both fountains are shut off, which is at times convenient.

Price \$3.65

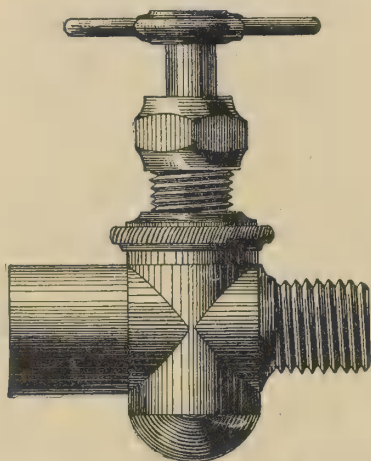
This cock is now made with a back plate having holes, so that it may be screwed up under the counter.



PIPE COUPLING.

For union of soda-water pipes.

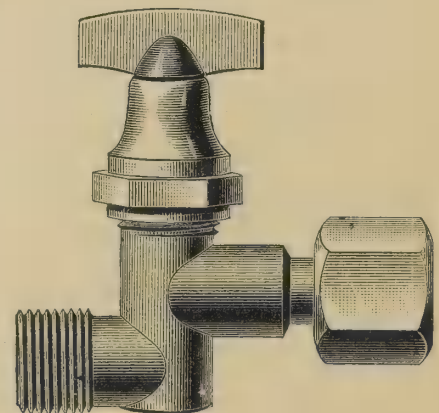
Male coupling lined with block-tin pipe	15c.
Female coupling with block-tin tail piece	20c.
Complete coupling	35c.



SUPPLY STOP-COCK.

To prevent wasting contents of cooler when an empty fountain is being removed.

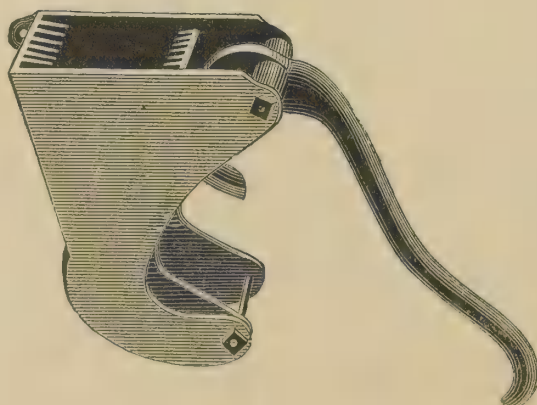
Price \$1.75



1869 STOP-COCK.

For use on an 1869 or a two-wheel soda-water draught-tube, to prevent wasting the contents of the cooler when a washer is needed in the draught-tube. It is lined throughout with block-tin pipe.

Price \$1.75



ICE CRUSHER.

This crusher will receive a piece of ice weighing 5 to 8 lbs. and quickly and easily break it to a size suitable for use in the ice vase shown on page 19.

Price \$10



SHOW BILLS. — These new show bills are lithographed in 6 colors, are handsomely done, and are suitable for prominent positions in first-class stores. A set of 5,—4 of which are here illustrated,—with a neat frame, will be furnished free with each apparatus. The frame is so made that the back, which is finished, can be removed and the show bill changed daily; and the remaining bills can be placed for safe keeping behind the one in use. Extra show bills and frames can be had at the following prices: show bills, each, 10 cents; frames, each, 75 cents.



SODA-WATER FLAVORS.

THE fruit juices and flavoring extracts here described are the best that long experience, great care, and ample capital can produce. I have the very strongest incentive, aside from any profit to be derived directly from their sale, in furnishing my customers with the very best article in juices and extracts that money and skill can produce, as the growth in popularity with the public of soda-water, and consequently the sale of soda-water apparatus, depends largely upon the quality of the beverage dispensed. It is well known that the sale of soda-water was phenomenal at the retail drug-store in Boston formerly owned by me. With years of experience, therefore, both as manufacturer and user, I am well aware what the necessities of the trade demand, and propose to supply this demand with goods best calculated to produce the desired result. The juices now offered are from the fruit crop of 1889. They are absolutely pure, were made under my personal supervision, will remain unchanged in any climate, and will not spoil even when the bottle remains open. They are far superior in quality to any previously offered by me and I believe them to be the best in the market, and warrant them to give entire satisfaction to the most exacting dealer. I have recently made extensive changes in the formulas for using my flavoring extracts, with a view to giving the users of them the benefit of recent improvements in methods and proportions for combining syrup, acid, color, and foam with the flavors in order to produce the best result. The enormous sale of my Vanilla Extract, the most expensive extract on the list, is a flattering indication that the trade appreciates a first-class article. The sale of my Hub Ginger-Ale Extract to the bottling trade has also been large, and great satisfaction has been expressed by many users. I propose to send hereafter with every package of extract such complete directions for use, that, taken in connection with some improvements in the goods, the result of careful experiment, they cannot fail to produce beverages which will be selected by the discriminating as the choicest.

FOR BOTH DISPENSERS' AND BOTTLERS' USE.

Pure Fruit Juices.

These juices are prepared from sound, ripe fruit, and preserved without sugar; they retain the natural flavor of the fruit, will remain unchanged in any climate, and will not spoil even when the bottles remain open. Furnished only in quart champagne-bottles.

	Per case of 12 bottles.
BLACKBERRY	\$6.00
CHERRY	6.00
FRUITINA, a blended juice of delicate flavor	6.00
GRAPE	6.00
MALTESE ORANGE, a blended fruit juice with an incomparable flavor, unexcelled for use with phosphates. For either dispensing or bottling	6.00
PINEAPPLE, particularly fine	6.00
RASPBERRY, particularly fine	6.00
STRAWBERRY	6.00
WILD CHERRY	6.00
Assorted dozens furnished at same prices if ordered.	

Flavoring Extracts.

Packages are charged extra for all goods in bulk: 1-gal. jugs, 20 c.; 2-gal. jugs, 35 c.; 3-gal. jugs, 50 c.; 5-gal. kegs, 75 c.; 10-gal. kegs, \$1.00. *No charge made for pint bottles, packing-cases, or carting.*

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
BANANA	\$1.25	\$6.00	\$5.00
BIRCH BEER . . . . .	.75	4.50	4.00
CARAMEL COLOR . . . . .	.50	1.25	1.00
CHOCOLATE	1.25	6.00	5.00
COFFEE, condensed . . . . .	.50	3.50	3.25
Is made from selected Male Berry Java Coffee. Will remain unchanged in any climate. The coffee produced from it is free from the bitter taste commonly found in coffee, and the delicate aroma is preserved. Price, per dozen pints, \$5.00.			
CREAM SODA, a combination which produces a very salable drink	\$1.75	\$8.00	\$7.50

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
FRUIT ACID (Citric Phosphate Solution), needed in all fruit-flavored syrups	\$0.50	\$2.50	\$2.00
FRUIT COLOR, used in syrups of the red fruits	1.50	10.00	9.50
GINGER-ALE, Hub	4.50	30.00	25.00
This is a highly concentrated extract, soluble in any proportion, of fine flavor, bottles a brilliant Ginger-Ale, will not precipitate, is easily handled, and produces more goods than six times the amount of any other. Will make a Ginger-Ale for dispensing equal to the finest bottled article. One pound will make 700 dozen half-pints, or nearly 12,000 9-ounce glasses. Price, in 5-lb. lots, per lb., \$4.00.			
NECTAR	\$1.25	\$6.00	\$5.00
NERVE TONIC	1.00	5.00	4.00
This makes an excellent drink. Its wholesome and agreeable taste is one that grows upon the consumer. One gallon of the extract makes nearly 6,000 8-ounce glasses, or nearly 375 dozen half-pint bottles of this popular beverage.			
OTTAWA BEER, always popular	\$0.75	\$4.50	\$4.00
PERUVIAN BEER, unsurpassed for quality and salability . . . . .	.75	4.50	4.00
One gallon of the extract will make 2,000 10-ounce glasses, or 175 dozen half-pint bottles of either Ottawa or Peruvian Beer.			
PINEAPPLE	\$1.25	\$6.00	\$5.00
RASPBERRY	1.25	6.00	5.00
ROOT BEER, wholesome and salable . . . . .	.75	4.50	4.00
SARSAPARILLA . . . . .	.75	4.50	4.00
SARSAPARILLA COLOR, for all goods requiring an amber color . . . . .	.50	1.25	1.00
SODA FOAM, liquid, the most effective article made for the purpose. Used in almost every variety of syrup . . . . .	.50	2.50	2.00
STRAWBERRY	1.25	6.00	5.00
SUGAR COLOR . . . . .	.50	1.25	1.00
VANILLA, concentrated, an unequalled specialty. Without exception, the best extract of Vanilla in the market	2.00	12.00	10.00
WINTERGREEN, or CHECKER-BERRY	1.25	6.00	5.00
YELLOW VEGETABLE COLOR, needed in Banana, Orange, Orange Flower, and Pine-apple syrups	1.50	10.00	9.50

Double Vanilla-Chocolate Paste.

The Chocolate syrup is prepared from this paste quickly and without trouble, as it simply requires dissolving in hot plain syrup. The paste will keep for years in any climate, and will not spoil even when open. When dissolved, it will remain in suspension. The beverage produced from this paste cannot be excelled by any preparation of cocoa. Per dozen 1-lb. cans, \$5.00. Single cans, 50 cts.

Tufts' Citric Phosphate.

Used exactly as Citric Acid is used, for which it is a complete substitute. Citric Phosphate is sold at one price throughout the year, and Citric Acid is rarely as cheap. Unexcelled for use at the soda-water counter; dissolved in water and squirted from an essence bottle. Unequalled in Orange Phosphate, the most salable of all the bottled beverages of recent introduction. More agreeable than Tartaric Acid, goes farther, and costs less.

S. D. LONG, Sc. D., Professor of Chemistry, Chicago Medical College, says: "The addition of Phosphates to our food is as rational, and frequently as necessary, as the use of common salt. In this way they act in preventing many disorders, and are not medicines, but foods."

Kegs of 100 lbs., 45 c. per lb.; kegs of 50 lbs., 48 c. per lb.; kegs of 25 lbs., 50 c. per lb. Jars of 10 lbs., 52 c. per lb.; jars of 5 lbs., 55 c. per lb. *No charge for packages.*

Filter Paper.

No. 33, per 100	\$0.60	No. 33, per 500	\$2.00
" 50, " . . . . .	.90	" 50, "	4.00
" 80, "	4.00	" 80, "	17.50

West-India Lime Fruit Juice.

Prepared expressly for the soda-water counter and for bottled Ginger-Ale. Per gallon (package extra), 90 cents.

Marble Dust.

Price, per barrel, delivered free on board in New York, in lots not less than 5 barrels, \$1.50.

Mineral-Water Salts.

PER PACKAGE SUFFICIENT FOR 10 GALLONS.

Apollinaris	\$1.00	Seltzer	\$1.00
Congress	1.00	Spa	1.00
Excelsior	1.00	Star	1.00
Kissengen	1.00	Sulphur	1.00
Saratoga	1.00	Vichy	1.00

{ Six packages, assorted if desired, \$5.00.

These Salts are composed of such materials as will reproduce, both in taste and chemical properties, the various mineral-waters for which they are intended. Great care is taken in their preparation, and, as a chemical analysis of the natural water is the basis of their manufacture, they contain the same medicinal qualities.

Dry Soda Foam.

Dry Soda Foam, in 4-ounce packages, each	\$0.25
For Bottlers, per dozen packages	2.00

FOR DISPENSERS' USE ONLY.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
ACID PHOSPHATE, for phosphates of all flavors	\$0.50	\$1.50	\$1.25
Orange phosphate is a wholesome and delicious drink, and always commands a large sale.			
GINGER, Jamaica, concentrated	\$1.25	\$6.00	\$5.00
Is produced in my factory under personal supervision, by exhausting fresh ginger-root with the finest spirits. Only			

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

the Jamaica root is used, the fragrant odor of which is preserved. This extract is purely ginger, is free from capsicum, and is as highly concentrated as it is possible to manufacture.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
GINGER-ALE, concentrated	\$1.00	\$6.00	\$5.00
This extract is made from pure ginger, and is entirely free from capsicum, which is found so generally in other so-called Ginger-Ale extracts. One gallon will make 2,500 9-ounce glasses of Ginger-Ale.			
GINGER CORDIAL SYRUP	—	\$1.25	\$1.15
Ginger is wholesome but unpalatable. In Ginger Cordial, however, a delicious non-alcoholic combination is presented. It is a new beverage which is bound to prove a seller. The Ginger Cordial is somewhat difficult to prepare, and consequently is offered only in the finished syrup, and put up in half-gallon bottles.			
GUM AROMA	\$1.00	\$5.00	\$4.50
LEMON, concentrated, very fine	1.25	6.00	5.00
MEAD, Arctic, 1 gallon will make 400 10-ounce glasses of Mead	—	3.00	2.50
ORANGE, concentrated, very fine	1.25	6.00	5.00
ORANGE FLOWER	1.25	6.00	5.00
ORGEAT, or ALMOND	1.25	6.00	5.00
PEAR	1.25	6.00	5.00
ROSE	2.50	15.00	14.00
SPEAR BEER . . . . .	.75	4.50	4.00

Tufts' Liquid Beef.

This Beef Extract is prepared in liquid form, with great care, especially for Hot Soda-Water. It will be found superior to anything in the market for both flavor and body. It has a pleasant odor, will not spoil, and, quality considered, is cheaper than if made from a solid extract by the user. Attention is called to the fact that this Beef is put up in bottles containing full measure, and that they are not of such shape as to deceive the purchaser in regard to the contents. There is on the market a liquid beef extract, the so-called 9-ounce packages of which contain but 6½ fluid ounces. Another liquid beef extract is put up in a bottle that contains but 4 fluid ounces, but which looks as if it held at least 6 ounces. Tufts' Liquid Beef is put up in 6-ounce bottles, each of which contains 6 fluid ounces. They are packed in neat cases containing one dozen each. A squirt-tube to fit the bottles is packed with each dozen.

Price, per single bottle, 75 cents. Per dozen, \$7.25.

Celery Salt.

The finest possible addition to hot beef tea. The odor of hot beef tea, so offensive to many, is thoroughly disguised by the addition of a little celery salt. Per pound, in pound packages, 10 cents. Individual Salt Caster of decorated glass, with silver-plated cap, filled with Tufts' Celery Salt, 35 cents.

When next in need of Juices or Extracts try these goods; you will continue to use them.

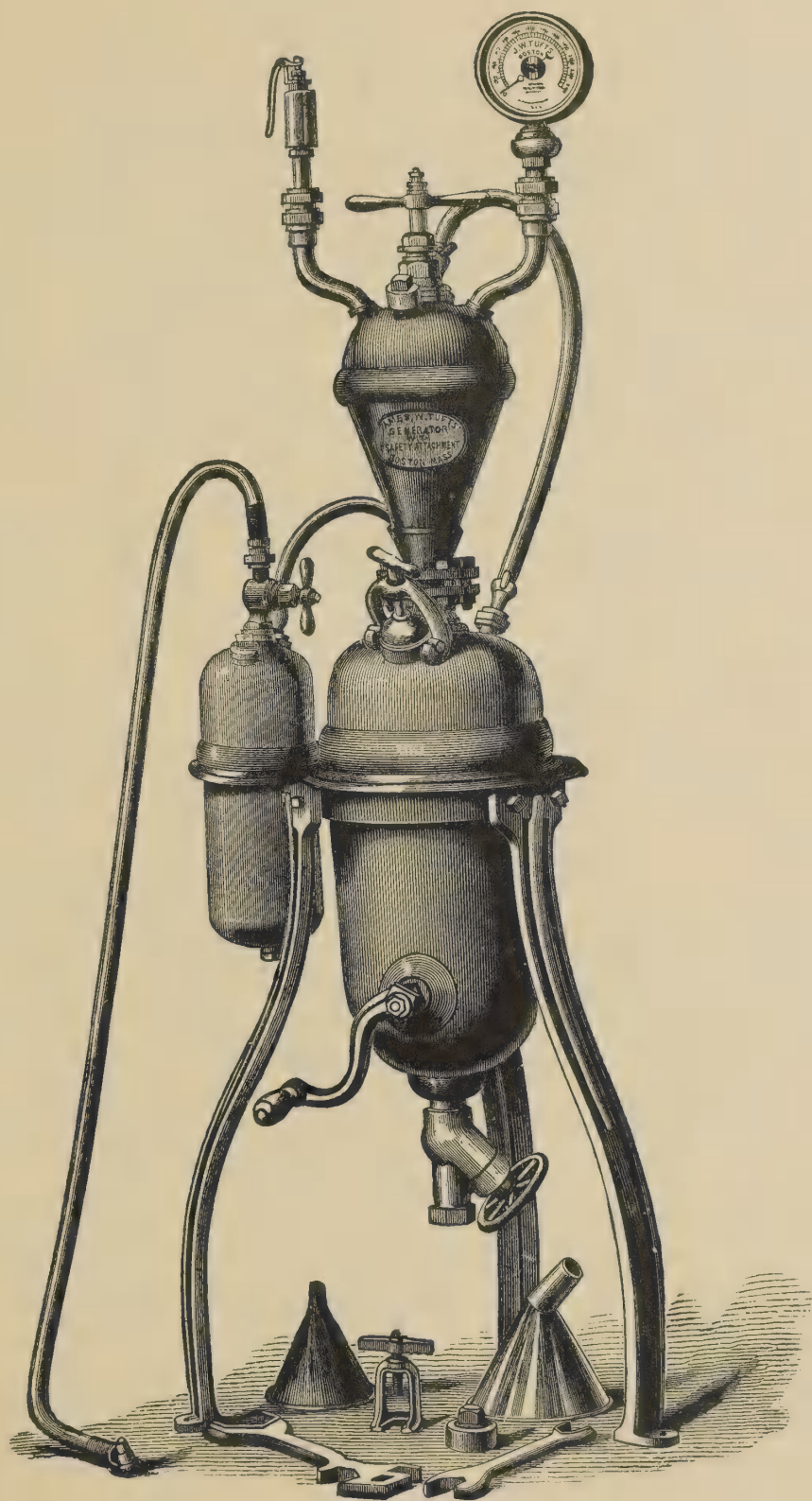
Sample Order.

THE following sample lot of Soda-Water Flavors will be sent, neatly and securely packed, to any address upon the receipt of \$25; and, upon first order only, freight-charges will be deducted from bill.

The goods are guaranteed equal to the best in the market, and are certain to give satisfaction to the user.

1/3 dozen	Strawberry Juice	\$2.00
1/3	" Raspberry "	2.00
1/3	" Pine-apple "	2.00
1/3	" Maltese Orange Juice	2.00
1/3	" Fruitina Juice	2.00
1/2	" Condensed Coffee and Jug	1.90
1/2	" cans Chocolate Paste	2.50
5	pounds Citric Phosphate	2.75
1	pint Fruit Color	1.50
1	" Soda Foam . . . . .	.50
1	" Nerve Tonic	1.00
1	" Extract Orange	1.25
1	" " Lemon	1.25
1	" " Vanilla	2.00
1	" Peruvian Beer Extract . . . . .	.75

\$25.40



IMPROVED STERLING GENERATOR.

TUFTS' IMPROVED STERLING GENERATOR.

TO those who intend to manufacture their own soda-water, the selection of the best generator is of the greatest possible importance. The pressure upon all parts of the apparatus in the act of charging is greater than that required of a steam-engine boiler; so that the generator should be of the strongest and best materials, be made with the utmost care by the highest skilled labor, and have every appliance for safety that invention and ingenuity can contrive.

It is well known that my generators have always been of the very highest grade of materials and workmanship (being superior even in that respect to all others); while they have possessed appliances for safety which have placed them far above those of every other manufacture, and have made them safe for those without experience.

It is, however, my aim to adopt every device that will further add to their completeness or the economy of their working, or tend to their absolute safety under all conditions.

I have therefore still further improved my Sterling generator, as shown in the engraving, which improvements are here explained: —

Instead of making the crown of the marble chamber of brass, as heretofore, it is now made of copper; as, after careful experiment, I have found that nearly all brass castings are porous to such a degree that, while subjected to a great pressure, gas will escape although the pores are so minute that water cannot be forced through them.

I have changed the hollow stem to the vitriol-pot, and it is now made solid; for, while it answered the purpose of the equalizing-pipe, it prevented the rapid working of the generator; as the acid falling around it stopped up in a measure the gas-passage.

These changes are, however, of minor importance; for, even as it was, the generator was by far the best and safest in the market. The changes of the greatest importance are, —

1. The lining of the body of the generator is cast into the copper shell, instead of being formed of sheet lead, a heavy and almost indestructible lining being thus obtained.

2. The location of the safety-valve and gauge. Instead of both having one opening for pressure indication, as heretofore, each has now its separate opening; so, that, should either through any accident fail to work, the other would answer its purpose equally well. This is an improvement of great value, as it doubles its provision for safety.

3. The safety-valve is greatly improved. While it acts automatically as before, and blows off at a given pressure, it is also provided with a hand-lever, so that it can be opened in a moment whenever desired, and the pressure released. This is a great advantage in point of still greater security; for in case of any mishap a simple touch will instantaneously release the pressure.

It is also improved in having a much larger outlet for the escape of the gas, consequently effecting a quick reduction of pressure.

4. Both gauge and safety-valve are placed at the highest point in the generator, and disconnected from every other attachment, so that they are secure from clogging. Also the location of the gauge allows it to be stationary, and always facing the operator in charging, instead of being revolved with the spindle as before.

5. The latest appliances for convenience as well as safety are furnished, including the French clamp-coupling to marble chamber, the blow-off cock for bottom of generator, tin and lead funnels, rubber charging-pipe, etc.

Altogether, the Sterling generator is not only the safest, but is the most complete, compact, and economical ever manufactured.

Notwithstanding all these improvements and additions, I have concluded to offer this improved generator at the same price as before, trusting for remuneration to a largely increased sale.

The generator is manufactured of extra heavy copper, well lined, and is constructed in the most substantial manner throughout.

Being entirely practical, with no complication of its parts to break or become disarranged, as in other generators, and making the *best of soda-water* with perfect ease and safety, it cannot but commend itself to all who will give it their attention and examination. Either bicarbonate of soda, marble-dust, or whiting may be used in manufacturing soda-water; although the preference may be given to soda on account of its cleanliness.

The No. 2 size is much more economical of labor and materials than the smaller, and is the size generally desired by retail dealers.

In charging soda-water, fountains are required, prices of which are given on pp. 218 and 219.

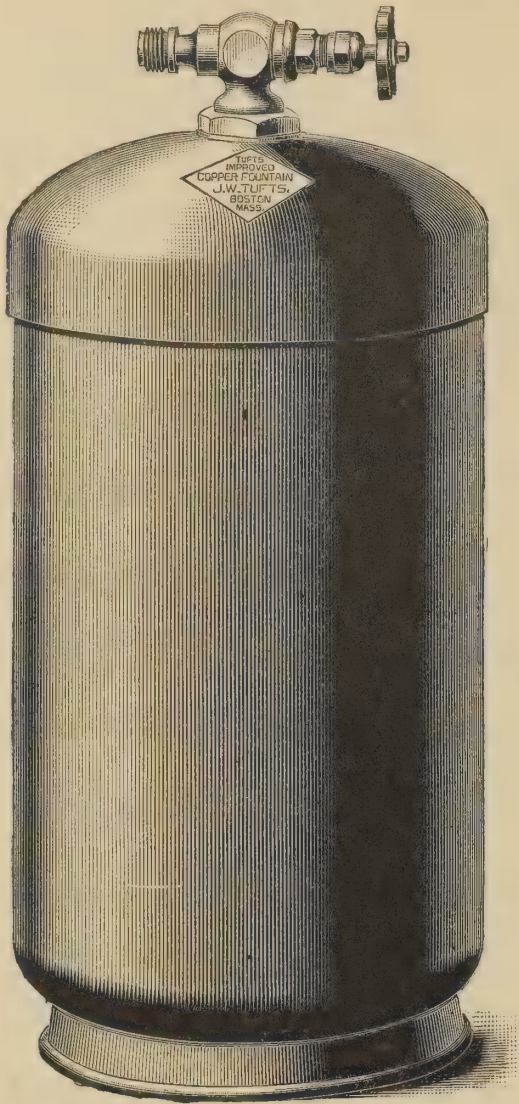
A rubber charging-pipe, instead of lead, will be furnished with my generators, — an advantage all will appreciate.

PRICE OF STERLING GENERATOR.

No. 2 size, to charge 28 to 50 gallons	\$175
“ 3 size, to charge 16 to 30 gallons	150

For an additional purifier, add to list for

No. 2 and 3 sizes	\$20
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IMPROVED COPPER FOUNTAIN.

THIS copper fountain is lined throughout with heavy sheet block-tin, the joints of which are burned with tin.

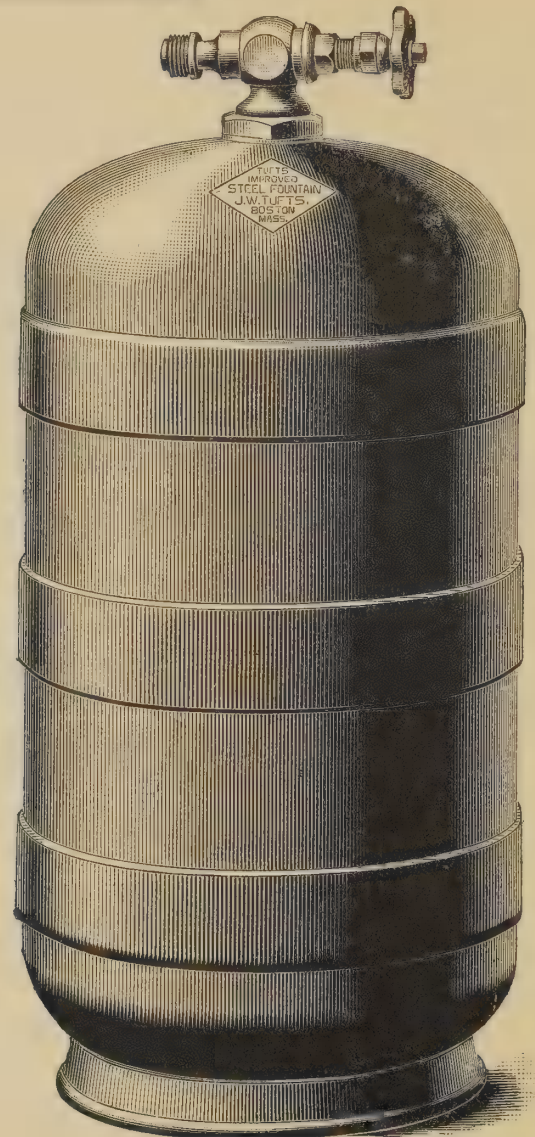
The cock is of the screw compression variety, and is pipe lined with block-tin and electro-plated with tin on the outside.

Either clamp or screw connection can be attached to this cock and without adding to the height, as they attach to the side instead of the top.

This fountain has neither handles, pins, nor solder band.

PRICE.

To hold 10 gallons of soda-water, height	
2 ft. 6½ in., each	\$45.00
To hold 6 gallons of soda-water, height	
2 ft. 4½ in., each	35.00



IMPROVED STEEL FOUNTAIN.

THIS fountain is made entirely without rivets, the side seam being welded, and the joint strengthened by the centre band, which is shrunk on before the fountain is put together. These fountains have been subjected to very severe tests, and are undoubtedly the strongest fountain made.

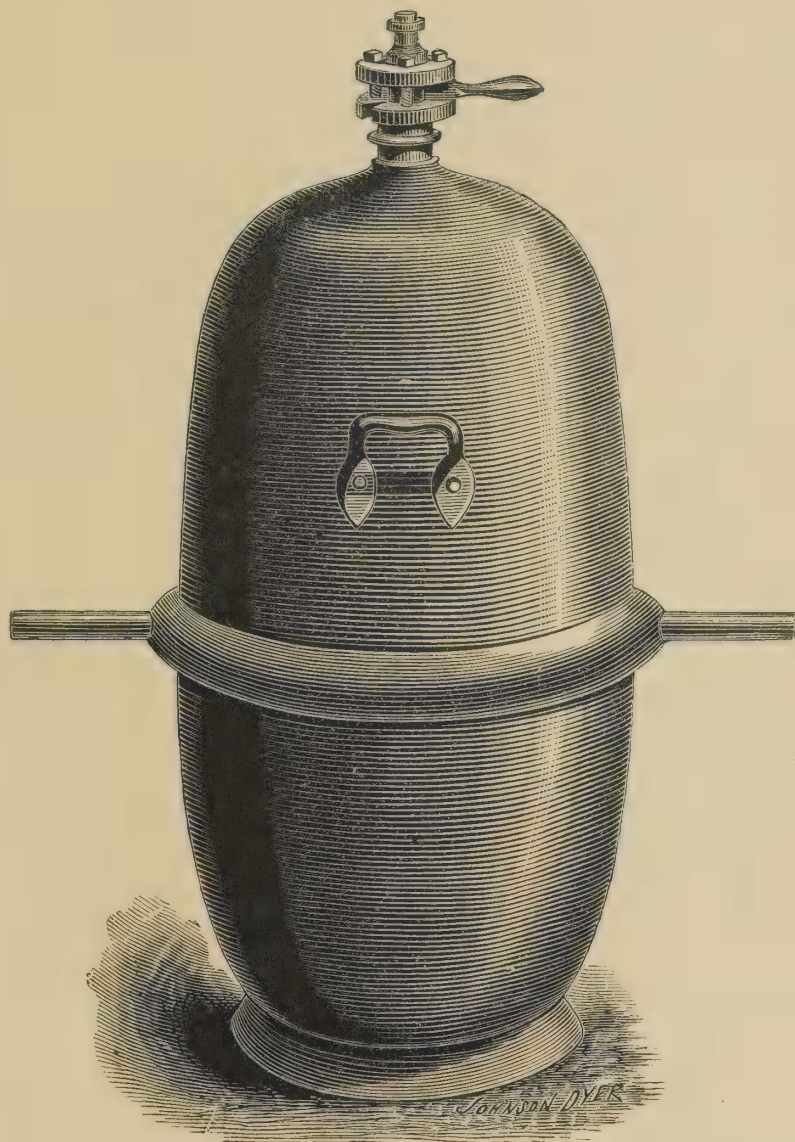
The edges of the cylinder fit into recesses in the heads, leaving the inside perfectly smooth and free from the sharp edges which cut linings and cause leakage in the steel fountains now in the market.

The shell of this fountain is strong and light, and the lining is heavy, making a fountain which for durability will excel all others. Each fountain is tested by hydraulic pressure to 500 lbs. to the square inch.

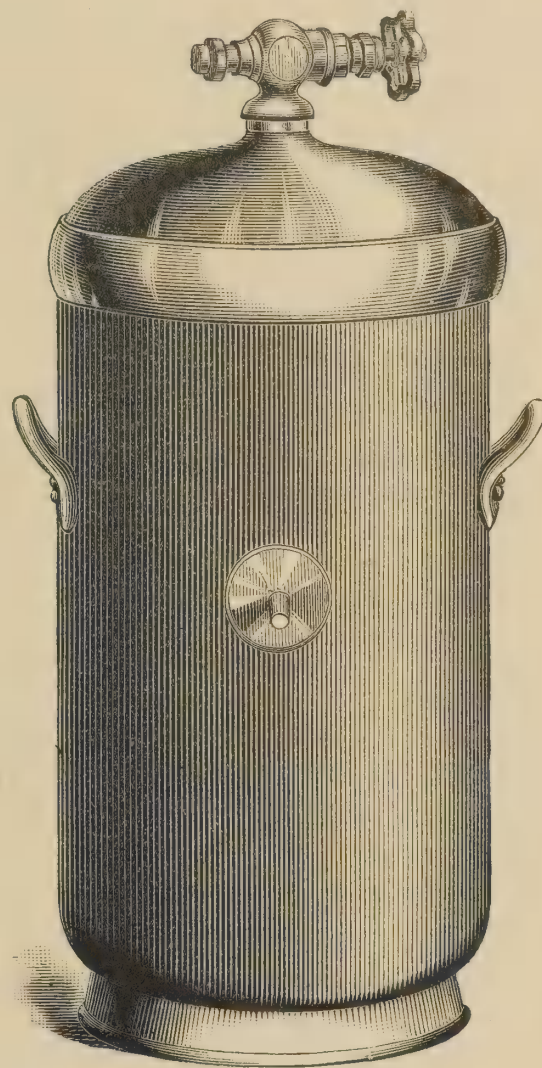
PRICE.

To hold 10 gallons of soda-water, height	
2 ft. 6½ in., each	\$35.00

COPPER FOUNTAINS.



STYLE NO. 1.



STYLE NO. 2.

HEAVILY LINED WITH BLOCK-TIN. LINED WITH SHEET BLOCK-TIN.

COPPER FOUNTAINS, on account of their well-known reliability and durability, still retain their popularity, and their sale and use continues undiminished in spite of competition. Many dealers of soda-water, who by long experience have learned to know their value, cannot be induced to use fountains of any other material.

Copper fountains are always furnished with No. 1 style cock, as shown on style No. 1 fountain, unless otherwise ordered. No. 2 or No. 3 style cocks will, however, be furnished instead, if desired, at the same price. See page 222.

No. 3 style cock is shown on sheet block-tin lined fountain.

PRICE AND HEIGHT OF FOUNTAIN

With No. 1 style cock, and clamp-joint and clamp attached.

	Block-tin lined Fountain.	Sheet block-tin lined Fountain.
To charge 14 gallons of water	2 feet 11½ inches . . . \$50	3 feet 2 inches . . . \$55
To charge 10 gallons of water	2 feet 9½ inches . . . 40	2 feet 11½ inches . . . 45
To charge 6 gallons of water	2 feet 7 inches . . . 30	2 feet 9½ inches . . . 35

No 2 style cock adds ½ inch to height.

No. 3 style cock as shown takes off 5 inches, as the clamp-joint and the clamp are attached to the side of the cock.

RELINING COPPER FOUNTAINS.

MY peculiar facilities in this line enable me to do work of this kind to the best advantage and with the utmost despatch. By my cold-chill process, a much heavier lining of block-tin is put on than is possible in any other way.

PRICE FOR RELINING.

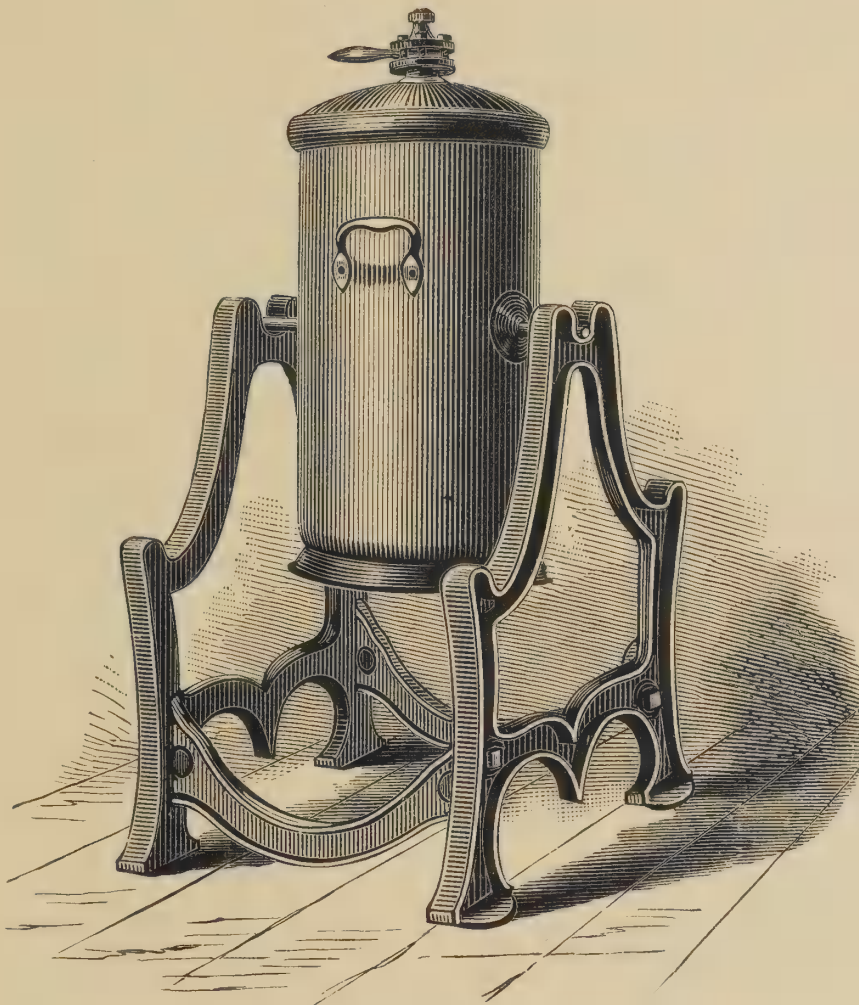
		SIZE.		
	6 gal.	10 gal.	14 gal.	
Retinning copper fountain, style No. 1	\$5.00	\$5.50	\$6.00	
Renewing lining in sheet block-tin lined copper fountain, style No. 2	6.00	6.50	7.00	
Renewing lining in improved copper fountain	6.00	6.50	—	
Renewing lining in improved steel fountain	—	6.50	—	

Freight added. No charge for extra solder.

To ascertain if a fountain needs relining, empty it of carbonic-acid gas by *tipping it upside down*, then wash out thoroughly, lower a lighted candle into the fountain by a wire, and it can be readily seen whether the lining is worn off, or not. A fountain well lined, and properly taken care of, will last for soda-water about five years.

IMPORTANT. This work should never be intrusted to other hands than those of a regular manufacturer of soda-water apparatus. Copper-smiths used to other kinds of work cannot appreciate nor understand the great strength required in a soda-water fountain, which is at all times subjected to a higher pressure than is required even in a steam-engine boiler.

As a fountain has to be taken apart for repairs and relining, it would be extremely hazardous to rely upon its being safely put together by a copper-smith who is not also a regular manufacturer of soda-water apparatus.



FRAME FOR FOUNTAINS.

The use of this frame lessens the labor of shaking, which is necessary in all cases to impregnate the water thoroughly with the gas.

The fountains hang on their pins, and will revolve with the least effort.

The generator is now furnished with an elastic charging-pipe, so that it is unnecessary to disconnect the fountain during the shaking process.

Price \$7.00

The fountain shown is the style lined with sheet block-tin.

FOUNTAIN ROCKER.

This rocker possesses the following advantages over others in the market:—

First. It will accommodate fountains either with or without trunnions, and of any size or shape.

Second. It is so constructed that the fountains will not be thrown from it during agitation.

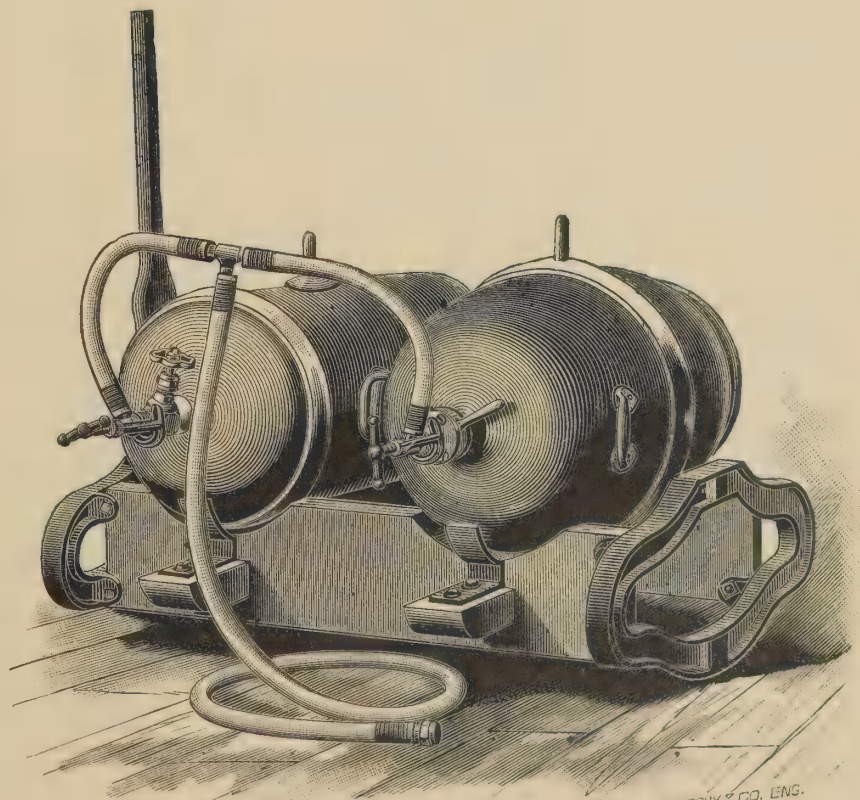
Third. The rockers are of such shape that the stop at the end of each forward and backward motion is very sudden, and the water is thereby violently agitated and thoroughly broken up, enabling the greatest possible absorption of gas, and effecting the most thorough saturation of the water.

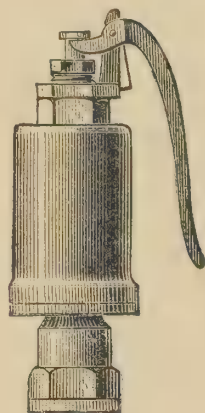
Fourth. It is heavy and strong, and will last for years, even if used constantly.

Fifth. It requires but a very slight exertion to operate it.

PRICE.

Rocker for two fountains . . .	\$12.00
Rocker for one fountain . . .	10.00
Double charging pipe . . .	8.00
Single charging pipe, 6 feet long . . .	5.00





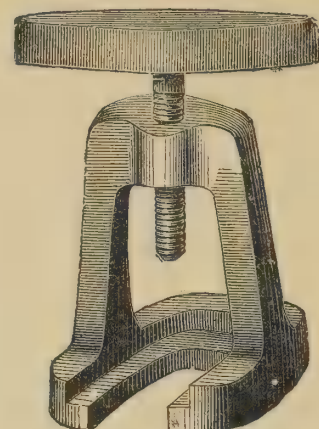
SAFETY-VALVE.

Price . . . \$15



SPANNER-WRENCH.

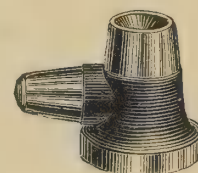
For removing fountain cock. Price, 50 cents.



CLAMP.

For fastening clamp-joint in position.

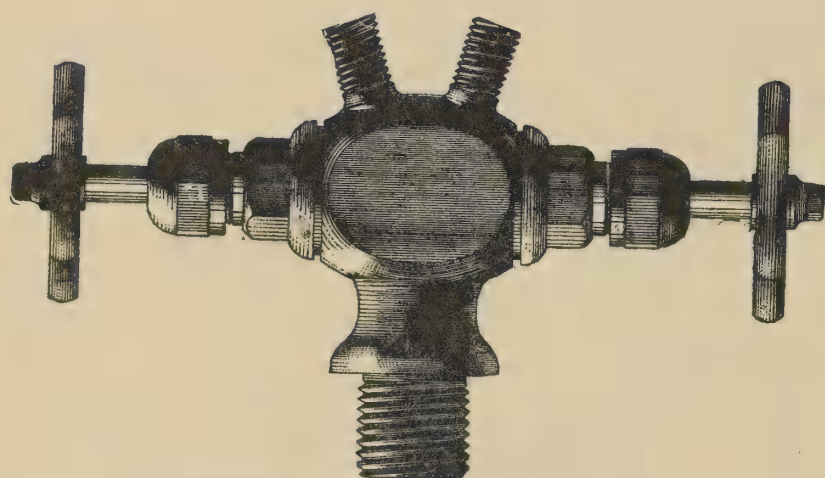
Price . . . 50 cents.



CLAMP-JOINT.

With strainer, and lined with block-tin pipe.

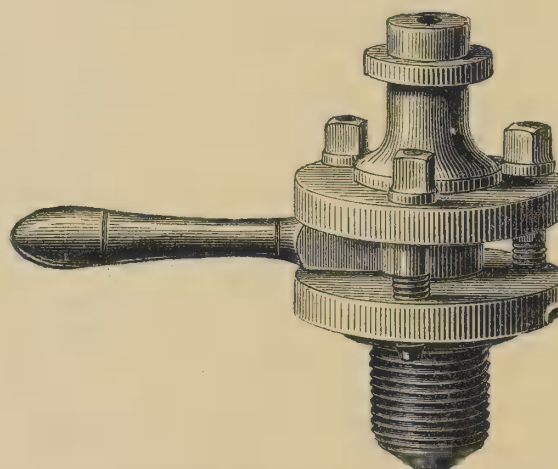
Price . . . 40 cents.



DOUBLE FOUNTAIN COCK.

For atmospheric hot or cold soda-water apparatus. Can also be used in charging siphons from a portable fountain, the generator and siphon filler being both attached to the fountain at once.

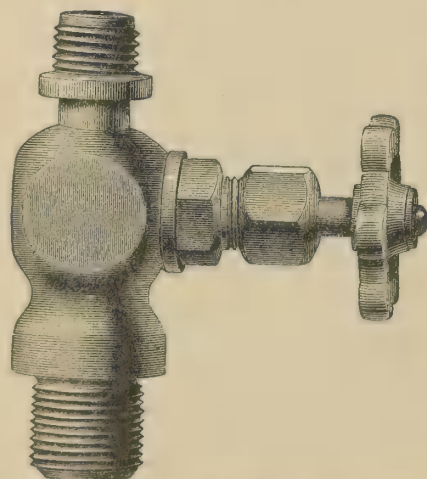
Price . . . \$6



FOUNTAIN COCK, NO. 1.

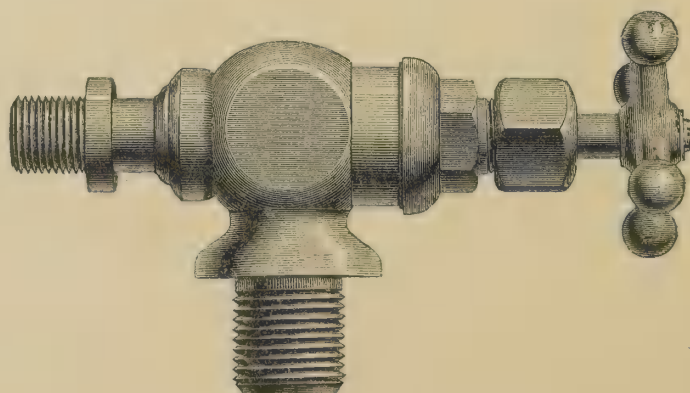
Regular style with clamp-joint connection,

Price . . . \$3



FOUNTAIN COCK, NO. 2.

With both clamp connection and male coupling. Can be attached to any make apparatus connection. Price, \$4.



FOUNTAIN COCK, NO. 3.

Same as No. 2, but horizontal to lessen height, making it more convenient to place fountain under counter. Price, \$4.



CLAMP-JOINT WITH CHECK-VALVE.

THE check-valve which forms part of this clamp-joint will automatically close when the clamp-joint is disconnected from an empty fountain;

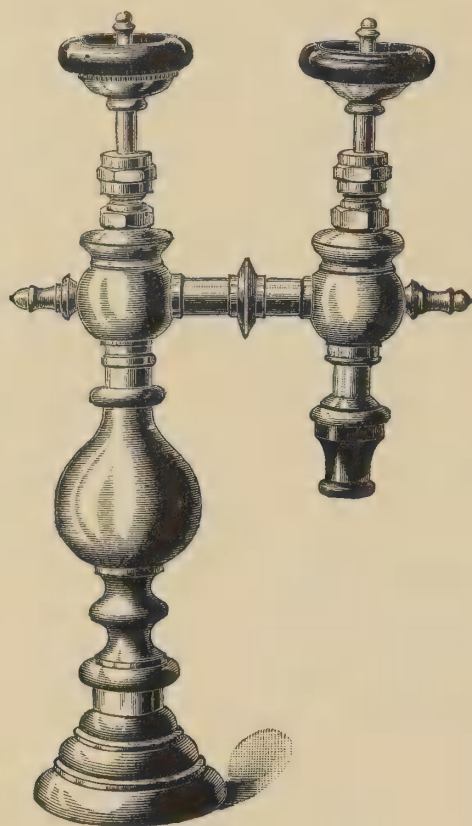


thereby saving the soda-water remaining in the pipes and coolers, and also saving the user from a wetting.

It is furnished free with all new marble apparatus made hereafter, and can be purchased separately and attached to the supply-pipes of any apparatus now in use.

PRICE.

Clamp-Joint with Check-Valve	\$1.50
Check-Valve only, with male nipples at ends and female couplings to fit	1.25



HOT SODA-WATER DRAUGHT-TUBE.

(TWO-WHEEL.)

THIS tube is intended for use with the Standard and similar hot soda-water apparatus. By its use the necessity of drawing off and throwing away the cold water which stands in the pipe and draught-tube, and thereby producing a bad impression on the customer, is avoided.

By opening the wheel at the top of column, the cold water is wasted without the knowledge of the customer.

The valves in this tube are of metal, having no rubber or leather washers to melt and ooze out.

Price \$20

Single-wheel hot soda-water draught-tube, same as above, but not arranged to waste cold water, \$15.

Two-wheel tube for use in a draught-apparatus, as shown in cut of Salamander, page 72, \$20.

STOVE STAND.

FOR COUNTER HOT SODA-WATER APPARATUS.

THIS stand rests upon the floor under the counter, and can be adjusted so as to raise the stove to any desired height.

By simply removing a pin the stove can be lowered for cleaning and lighting.

A hole 1 foot in diameter is required in the counter slab.

The use of this stand will prevent the heat from breaking the counter slab, and will also prevent soot and smell. The hole which it necessitates in the counter slab provides the large amount of ventilation necessary to enable these stoves to work in a satisfactory manner.

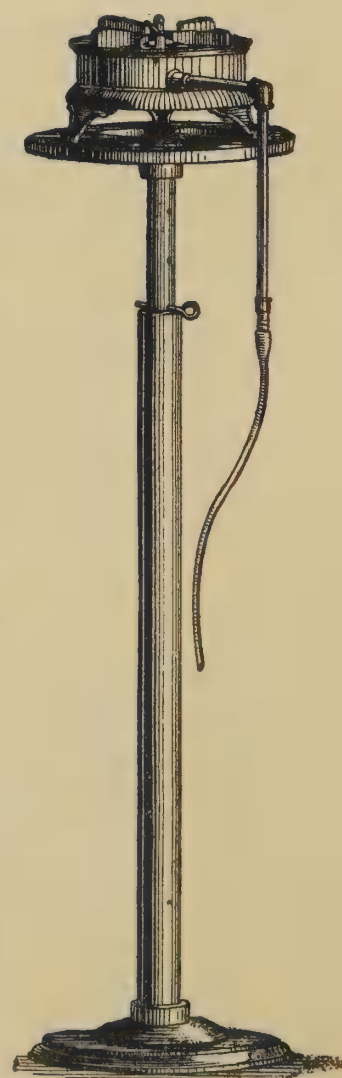
When the hot soda-water apparatus is removed, at the end of the season, this hole and the water connection can be used for a Scylla or other tumbler washing device.

PRICE.

Stand for gas stove	\$2.50
“ oil “	2.75
Oil stove	7.50
Gas “	2.50

This stand is furnished, without extra charge, with each of my counter hot soda-water apparatus.

The stove consumes an average of $5\frac{1}{2}$ feet of gas per hour, at $\frac{16}{10}$ pressure.

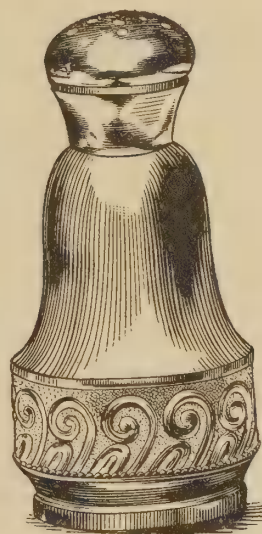




Silver Salt Bottle.
No. 2415.
With Patent Star Shaker.
Price . . . \$1.00



Silver Salt Bottle.
No. 2416.
With Patent Star Shaker.
Price . . . \$1.00



Salt Bottle.
No. 3436.
With Patent Star Shaker.
Price . . . \$1.00



Pepper Bottle.
No. 3436.
Price \$1.00

Silver Pepper Bottle. Silver Pepper Bottle.
No. 2415. No. 2416.
Price . . . \$1.00 Price . . . \$1.00



Silver Hot Soda-water Cup.
No. 1351.
Quadruple plate. To hold 9 ounces.
Price . . . \$1.75



Silver Hot Soda-water Cup.
No. 1342.
Quadruple plate. To hold 7 ounces.
For beef tea.
Price \$1.50



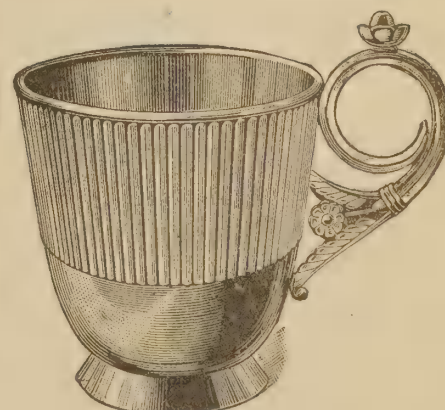
Silver Hot Soda-water Cup.
No. 1350.
Quadruple plate. To hold 9 ounces.
Price . . . \$1.50



Cream Pitcher.
No. 1925.
Quadruple plate.
To hold 1 quart . . . \$3.75
To hold 1 pint . . . 3.00
With cover, add50



Spoon-Holder.
No. 1925.
Quadruple plate.
Price \$2.75



Silver Hot Soda-water Cup.
No. 1352.
Quadruple plate.
To hold 9 ounces.
Price . . . \$1.75



China Tumbler,
6-ounce size.

Designed especially for hot soda-water, and made for me exclusively, at a noted European pottery.

Price, per dozen, \$4.00.



Tumbler Holder, style N.

To fit any regular soda-water tumbler.

Price per set of six, \$8.00.



China Tumbler,
8-ounce size.

Designed especially for hot soda-water, and made for me exclusively, at a noted European pottery.

Price, per dozen, \$4.50.

Tumbler Holder,
style S.

To fit only the 6-ounce China Tumbler.

Price, per set of six, \$7.00.

China Tumbler, 8-ounce size.

Price, per dozen, \$4.50.

Tumbler Holder,
style R.

To fit only the 8-ounce China Tumbler.

Price, per set of six, \$8.00.

Cream Pitcher,
No. 2160.

Quadruple plate.

Old Silver . \$5.00

Plain Silver . 4.25

To hold 28 ounces.



Cream Pitcher, No. 2160.



Dresden China Cup.

Dresden China Cup.

Decorated in blue.

Designed specially for hot soda-water, and made for me exclusively at the Royal Dresden factory.

To hold 7 ounces.

Price, per dozen, \$5 00.



WHIPPED CREAM BOWL. Price, \$6.00.

HOT SODA FLAVORS.

THE attention of the trade is invited to the goods mentioned in this price-list, with the assurance that the quality will be found equal, if not superior, to any in the market. My superior facilities for the production and manufacture of these articles, together with a very large sale, enable me to offer lower prices than is possible for any other manufacturer.

The beverages dispensed must be "first chop," or a trade in them cannot be built up and maintained. To secure this necessary end, use the extracts advertised below.

Packages are charged extra for all goods in bulk.



Tufts' Double-Vanilla Chocolate Paste.

THE chocolate syrup is prepared from this paste quickly and without trouble, as it simply requires dissolving in hot plain syrup. The paste will keep for years in any climate, and will not spoil even when open. When dissolved it will remain in suspension. The beverage produced from this paste cannot be excelled by any preparation of cocoa.

Put up in pound cans with full directions. Each pound will make one gallon chocolate syrup.

Per Dozen, One-Pound Cans, \$5.00. Single Cans, 50 Cents.

Tufts' Condensed Coffee

Is made from selected Male Berry Java Coffee. It will remain unchanged in any climate. The coffee produced from it is free from the bitter taste commonly found in coffee, and the delicate aroma is preserved.

Per Gallon, \$3.50. Per Pint, 50 Cents.

Tufts' Extract of Jamaica Ginger

Is produced in my factory, under personal supervision, by exhausting fresh ginger root with the finest spirits. Only the Jamaica root is used, the fragrant odor of which is preserved. This extract is purely ginger, is free from capsicum, and is as highly concentrated as it is possible to manufacture.

Per Gallon, \$6.00. Per Pint, \$1.25. Per Gallon, in 5 Gallon Lots, \$5.00.

Hot Ginger Cordial Syrup.

GINGER is a wholesome hot drink, but is not usually a very palatable one. In hot Ginger Cordial, however, a delicious non-alcoholic combination is presented. It is a new beverage which is bound to prove a seller. The Ginger Cordial is somewhat difficult to prepare, and consequently is offered only in the finished syrup. Put up only in half-gallon bottles.

Per Gallon, \$1.25. Per Dozen Bottles, \$6.00.

Tufts' Nerve Tonic.

THIS makes an excellent hot drink. Its wholesome and agreeable bitter taste is one that grows upon the consumer.

One gallon of this extract will make nearly six thousand eight-ounce cups of nerve tonic.

Per Gallon, \$5.00. Per Pint, \$1.00. Per Gallon, in 5 Gallon Lots, \$4.00.

Tufts' Acid Phosphate.

HOT EGG PHOSPHATE, when carefully made, is always a selling drink. Be sure that the egg is fresh, and that the water is not hot enough to cook it; use a pure acid phosphate, and flavor with a lemon or orange. TUFTS' ACID PHOSPHATE is unexcelled.

Per Gallon, \$1.50. Per Quart, 50 Cents. Per Pint, 30 Cents.

Tufts' Extracts of Lemon and Orange.

THESE are made from the latest importation of oil, the entire original package being dissolved immediately after being opened.

These extracts are highly concentrated, and are especially prepared for soda-water syrups. For such use a more positive flavor is required than is found in extracts usually sold, which are totally unfit for this purpose. Prices in bulk do not include packages.

Per Gallon, \$6.00. Per Pint, \$1.25. Per Gallon, in 5 Gallon Lots, \$5.00.

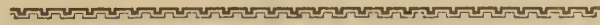
Tufts' Maltese Orange Juice.

A BLENDED fruit juice with an incomparable flavor, preserved without sugar. Unexcelled for use with hot egg phosphate. This juice will remain unchanged in any climate, and will not spoil even when the bottle remains open.

Per Case of 12 Champagne Quart-Bottles, \$6.00.

Tufts' Liquid Beef.

THIS Beef Extract is prepared in liquid form, with great care, especially for Hot Soda-Water. It will be found superior to anything in the market for both flavor and body. It has a pleasant odor, will not spoil, and, quality considered, is cheaper than if made from a solid extract by the user. Attention



is called to the fact that this beef is put up in bottles containing full measure, and that they are not in such shape as to deceive the purchaser in regard to the contents. There is on the market a liquid beef extract, the so-called nine-ounce packages of which contain but 6½ fluid ounces. Another liquid beef extract is put up in a bottle that contains but 4 fluid ounces, but which looks as if it held at least 6 ounces. Tufts' Liquid Beef is put up in six-ounce bottles, each of which contains 6 fluid ounces. They are packed in neat cases containing one dozen each. A squirt-tube to fit the bottles is packed with each dozen.

Price, per single bottle, 75 cents. Per dozen, \$7.25.

Tufts' Celery Salt.

THE finest possible addition to hot beef tea. The odor of hot beef tea, so offensive to many, is thoroughly disguised by the addition of a little celery salt.

Per Pound, in Pound Packages, 10 cents. Individual Salt Castor of Decorated Glass, with Silver-Plated Cap, Filled with Tufts' Celery Salt, 35 cents.

PACKAGES.

PACKAGES are charged extra for all goods in bulk.

1	gallon jugs, extra	. . . . .	\$0.20	5	gallon kegs, extra	. . . . .	\$0.75
2	" " "	. . . . .	.35	10	" " "	. . . . .	1.00
3	" " "	. . . . .	.50				

I do not supply either Clam Juice, Chicken Broth, or Lemon Juice; they can be obtained of all wholesale druggists and wholesale grocers.

Clam Juice.

FOR the preparation of Clam Bouillon, which has acquired great popularity wherever introduced, I recommend Bailey's Concentrated Clam Juice, made by the Bailey Canning & Preserving Co., Orleans, Barnstable Co., Mass., and sold by all wholesale grocers.

Lemon Juice.

FOR the manufacture of hot lemonade, which will have the fruit-body without necessitating the delay and trouble of cutting and squeezing the fruit, I recommend Von Laer's lemon juice. (J. P. W. von Laer, Boston.) It can be obtained of wholesale grocers.

Manufactured in large lots, it can be sold for less than it will cost the user to make it.

All Extracts of my Manufacture are Warranted Equal to the Best in the Market, and to give Entire Satisfaction to the Purchasers.

Address all orders,

EXTRACT DEPARTMENT.

IMPROVED BOTTLING TABLE.

THE new-pattern table is simple and strong. It is made of heavy stock, the top being two inches thick, put together entirely with bolts and finished in oil and shellac.

The rods are short and very heavy, and the principal bearings are babbited. The spring is made of a special grade of steel, and hung in such a manner that its operation is very easy. Both hand-lever and foot-treadle have double bearings; they are entirely of wrought-iron, and are very strong.

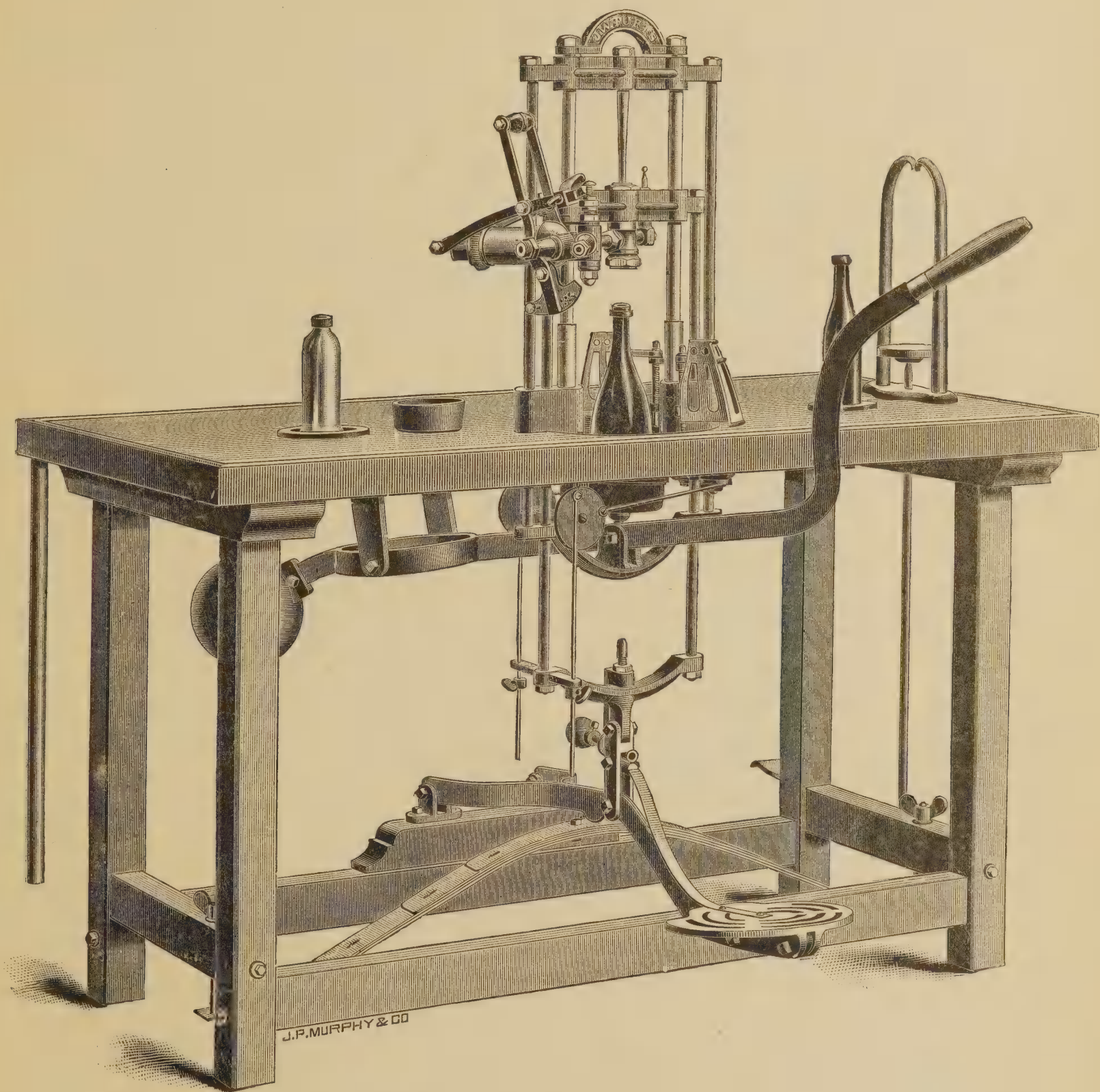
The recessed plate enables the bottler to fill all sizes of bottles. It is provided with a cup for the removal of broken glass.

The mechanism which operates the shield is very simple, and so constructed that the shield does not open until the hand-lever is raised to its highest point.

The cork-gauging attachment can be set for any length of cork, and when set, the corks will be driven exactly the same distance, no matter how the bottles vary in length. It is operated without removing the hand either from the syrup-pump or the hand-lever, therein differing from other devices for the same purpose. This device is patented.

The syrup-pump has a solid plunger of hard rubber, and valves of the same material. It is lined throughout with block-tin, even the barrel being lined. It can be adjusted to throw from one to four ounces, as desired. The water-valve can be operated with ease, independently of the pump. This is an improvement of importance, as by its use syrup is saved in case of losing a cork, or other accident causing loss of pressure. The motion made in operating this pump is very slight, and being a natural and easy motion, the operator can do more work and feel less tired than with any other pump made.

The air-valve is of the most improved pattern, and wastes the least possible amount of water.



BOTTLING TABLE (Patented).

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.



The tyer will be found a great convenience in wiring corks. It is so made that it can be used either single or double as desired.

The edge of the table is grooved, and a drain-pipe is furnished at one corner. The recessed pot is supplied with a nipple to which a rubber drain can be attached. The air-valve also can have a drain-pipe attached to it. These facilities enable the bottler to keep his clothing dry, and his table and floor in a neat condition, by draining away the waste water.

An improvement not shown in the illustration is a ring and galvanized iron pail for holding soaked corks. This pail-ring is pivoted to the table-top at the left of the bottler's position, and can be swung under the table when not in use. It is a convenience highly appreciated by those who have used it.

A five-gallon syrup-can with a glass gauge, in which the amount of syrup can be seen at a glance, is also supplied.

SIZE. — Length of table top, 4 ft. 2 in.; width of table top. 2 ft.

P R I C E.

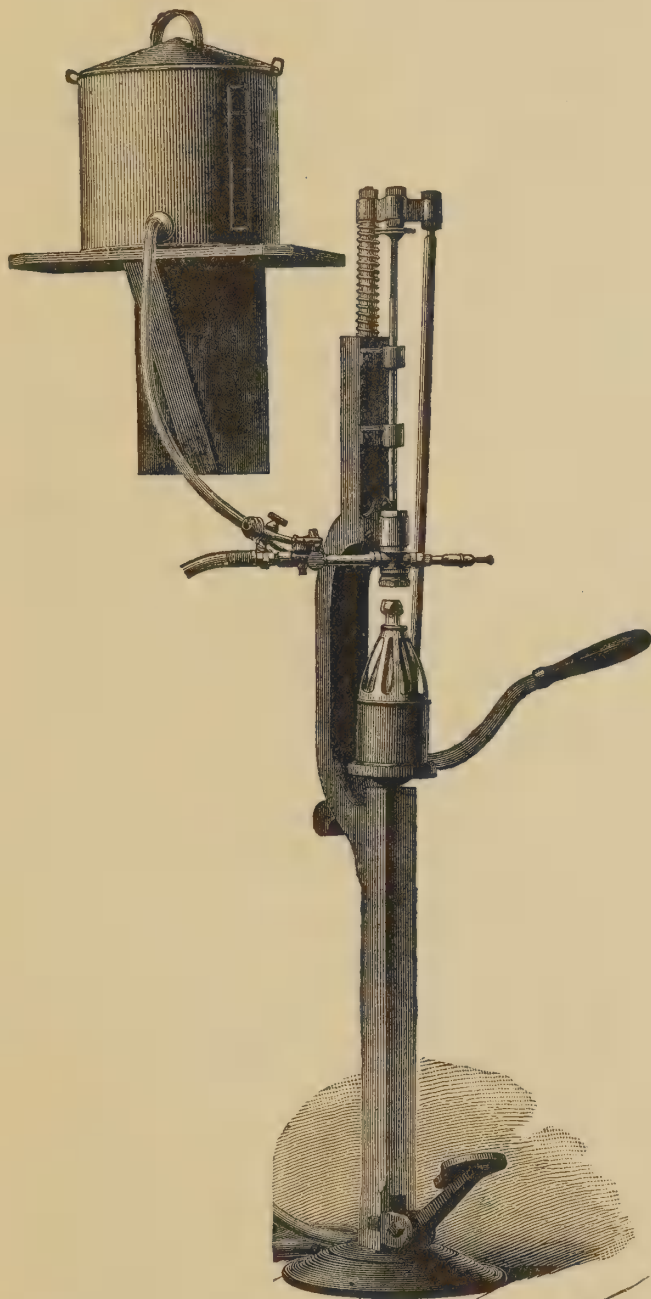
Hard-wood table complete, as shown, with syrup-can and cork-pail	\$135.00
Soft-wood table complete, as shown, with syrup-can and cork-pail	120.00
Hard-wood table only, with recessed plate and air-valve; but without the syrup-pump, shield, and attachments, tyer, cork-gauging attachment, syrup-can, or cork-pail	100.00
Soft-wood table only, with recessed plate and air-valve; but without syrup-pump, shield, and attachments, tyer, cork-gauging attachment, syrup-can, or cork-pail	85.00

These Bottling-Tables are furnished only as priced above, and no deduction can be made for any of the articles omitted. A rubber charging-pipe is not furnished with the table, and if wanted must be charged for extra.

The following list of prices is furnished for the convenience of those who wish separate parts, but these prices cannot be deducted from the price of the tables as above, as the completed table is offered at a very much lower price than the aggregation of parts would allow.

Patent Syrup-pump, 1 to 4 ounces	\$35.00
Syrup-gauge, 2½ to 4 ounces	25.00
Syrup-gauge, 1 to 2½ ounces	20.00
Syrup-gauge, ½ to 1 ounce	15.00
Shield and Attachments	15.00
Cork-gauging Attachment	10.00
Attachment for Hutchinson stoppers	10.00
Tyer, complete	5.00
Cork-pail (of galvanized iron) and bracket-ring	5.00
Air-valve	5.00
Syrup-can, 5 gallons' capacity, with glass gauge, and 4 feet rubber pipe, with connection and cock	5.00
Syrup-cocks for pump or gauge, each	1.50
Female Couplings for rubber charging-pipe, per pair	1.25
Rubber packing for filling heads, each . . . . .	.50
Rubber charging-pipe, per foot . . . . .	.35
Rubber Pipe for Syrup-cans, per foot . . . . .	.25
Wiring Couplings to rubber charging-pipe, each . . . . .	.25

BOTTLING MACHINES.



No. 1.

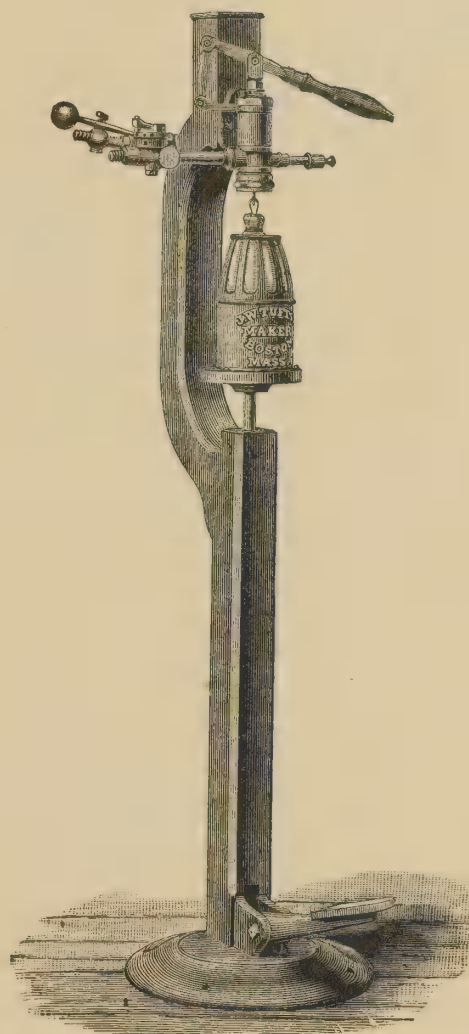
For Corks.

This machine is devised for those bottlers who wish a simple, inexpensive machine and desire to economize room. It has been improved by the substitution of a weight on the lever for the spiral spring.

PRICE.

Complete, as shown	\$75
If without syrup-gauge, deduct	15
If without syrup-can, deduct	5

Height, 72 inches.



No. 2.

For Hutchinson, Klee, Miller, or Parkhurst Stoppers.

This machine is especially designed for bottlers who use the Hutchinson, Klee, Miller, or Parkhurst stoppers. It is made specially strong, so that it cannot get out of order through proper usage, and is arranged for the most rapid working.

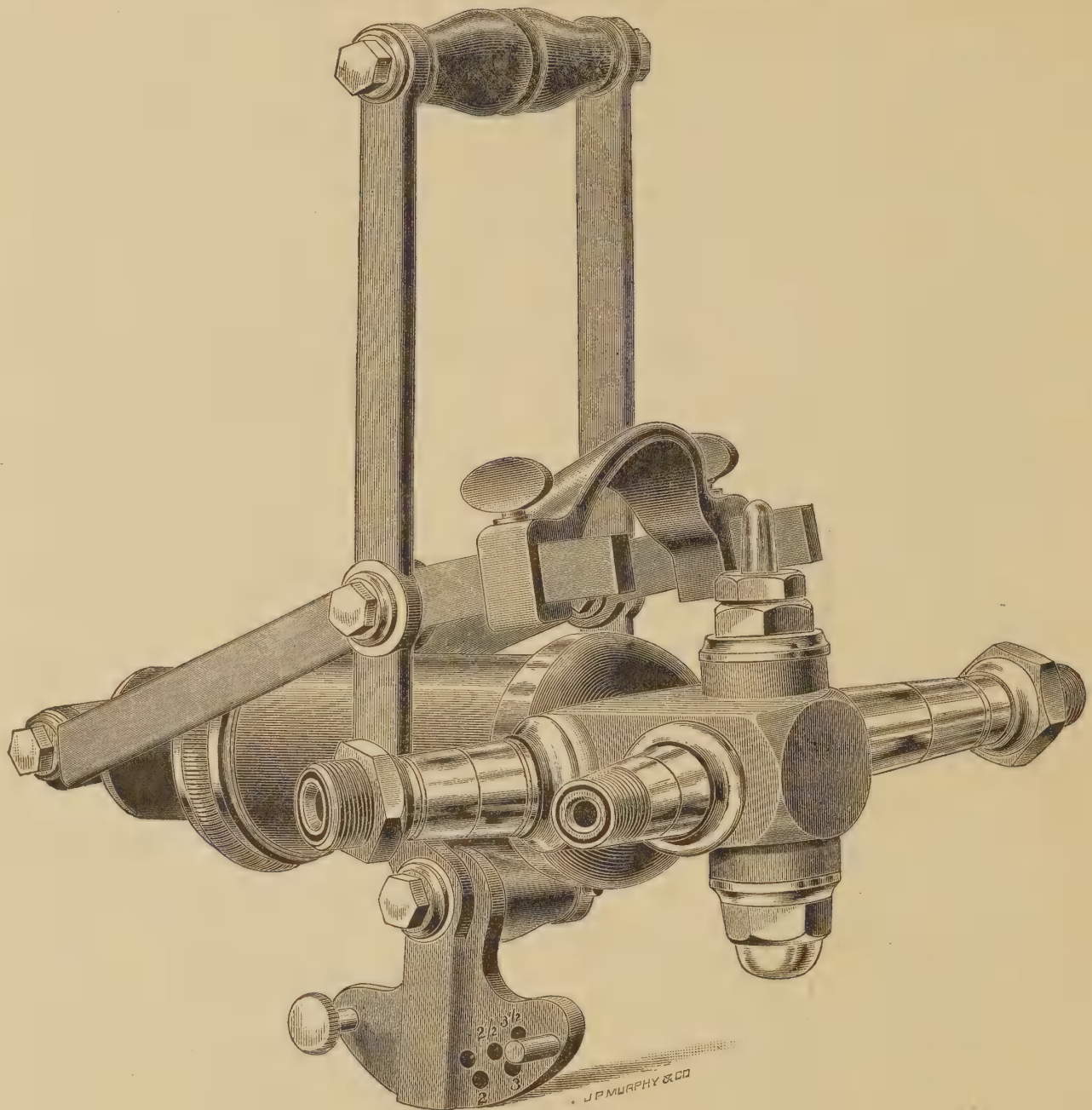
It has every appliance for safety and convenience.

This machine cannot be used excepting for the stoppers above mentioned.

PRICE.

Complete with syrup-gauge, as shown	\$60
For syrup-can, add	5
If without syrup-gauge, deduct	15

Height, 60½ inches.



PATENT SYRUP-PUMP.

The easiest working pump in the market. Practical for either half-pint or quart bottles.

THIS is the only pump made that is lined throughout, including the barrel. The solid plunger and the syrup-valves are of hard rubber; they require no packing, and are not liable to get out of order. The water-valve, being on the outside, is convenient to repack or re-washer when necessary. This is a suction pump, and it is not necessary to have the syrup-can on a shelf or hung to the ceiling. The beverages which pass through this pump will be absolutely free from contamination. The bottler who is so particular to have his fountains lined with block-tin to protect his soda and mineral waters from metallic taint, and who is often compelled to pass these waters and his acid syrups through a syrup-pump or gauge lined with verdigris, will appreciate this pump. At the end of the upright arm is a disc with screw pin and holes for gauging the quantity of syrup. The outside holes are for 1 oz., 2 oz., and 3 oz., and the inside holes for $1\frac{1}{2}$ oz., $2\frac{1}{2}$ oz., $3\frac{1}{2}$ oz. For 4 oz., the arm is allowed to strike the stationary pin, and the movable pin is placed for safe keeping in the hole which is not marked. The operation of the pump is a forward and back direct motion, making the stroke very short. The opening of the soda-water valve is at the extreme end of the stroke, and the syrup is all discharged from the barrel before the water-valve is opened. Plain soda-water may be bottled without using the lever, as the water-valve is now made with a flat top, and can readily be depressed by the thumb. The pump may be adjusted as desired, to open the water-valve wide for quart bottles, or slightly for half-pint bottles, by moving the slide on the arms and setting it by means of the thumb-screws.

PRICE \$35

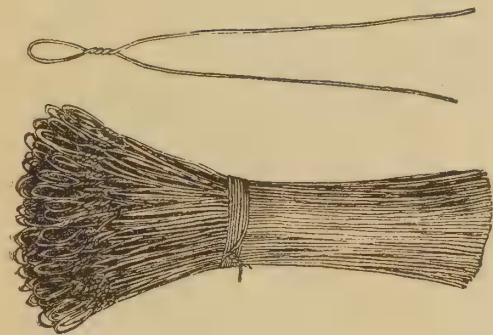
CORK-PAIL AND RING.

THE improvement shown in the illustration is a galvanized iron cork-pail, supported by an iron ring which is pivoted to the top of the bottling table.

It is placed at the left of the bottler's position, and when not in use can be swung under the table.

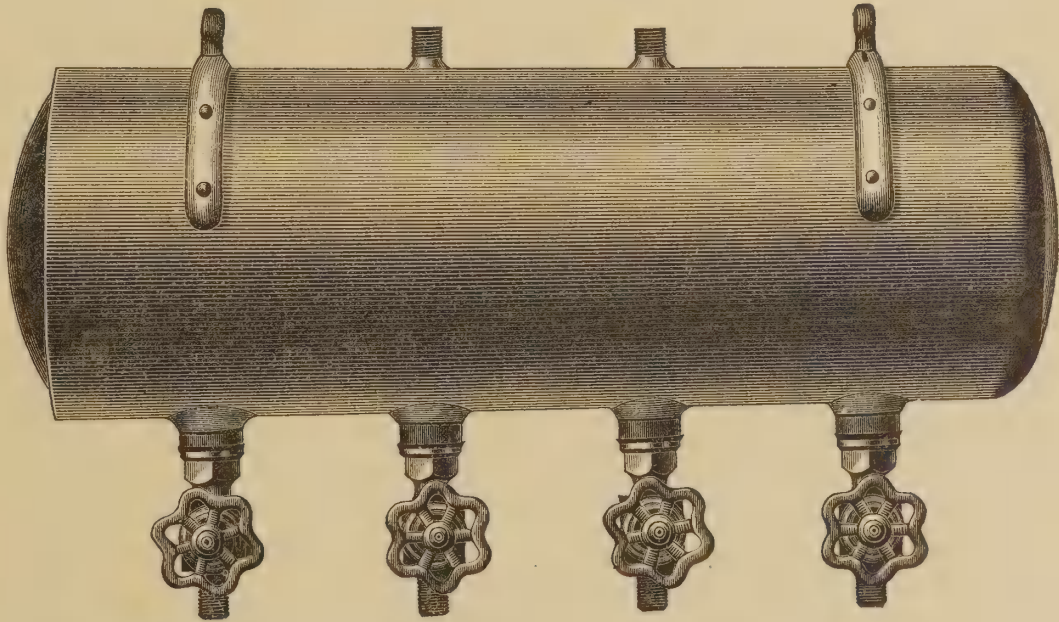
It is a convenience highly appreciated by those who have used it.

Price \$5.00



GINGER-ALE WIRES.

Price per thousand 60 cents.

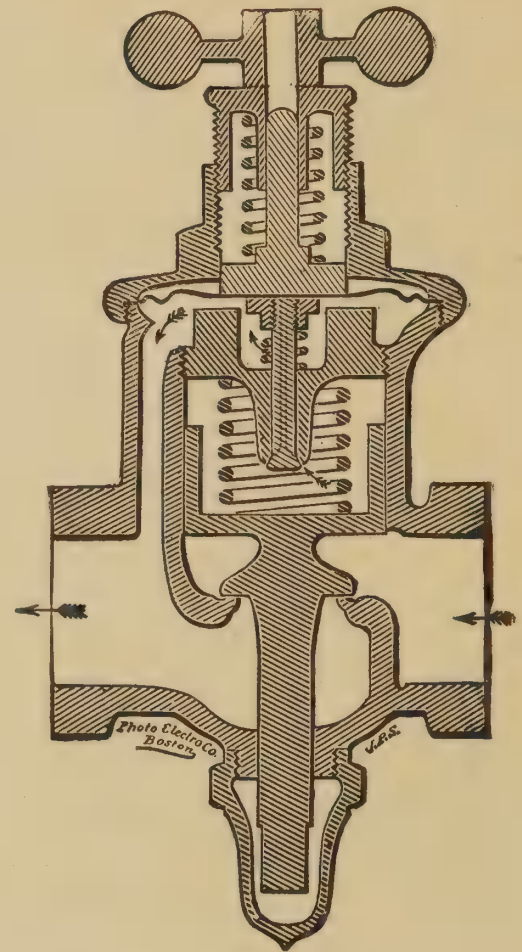
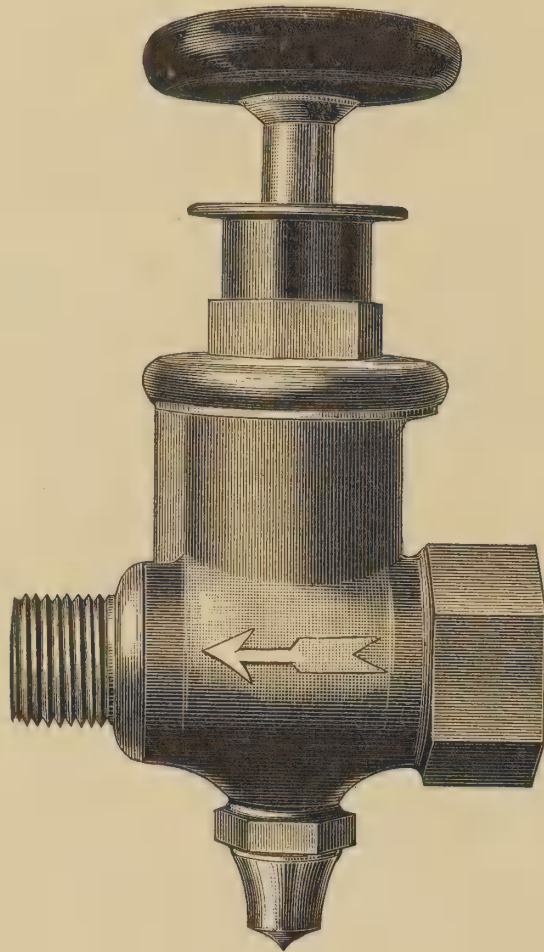


DISTRIBUTING CYLINDER.

FOR equally distributing the pressure where two or more bottling tables are supplied from one fountain.
This cylinder is made of copper, lined throughout with sheet block-tin. It is provided with brass eye-straps and hooks, by means of which it can be hung from the ceiling.

PRICE.

For 2 bottling tables	\$25.00
For 3 bottling tables	30.00
For 4 bottling tables	35.00



AUTOMATIC REGULATING-VALVE.

Patented May 7, 1872, Aug. 17, 1880, Oct. 26, 1880. Adjustable at from 5 to 200 pounds' pressure.

THE pressure regulating-valve resembles an ordinary cock. It has two valves, — a main valve which regulates the flow of the gas, and a secondary valve which controls the main valve, — a rubber diaphragm by means of which the secondary valve is operated, a hand-screw with a strong spring and a follower by which any given pressure can be placed on the upper side of the diaphragm, and a passage through which the back pressure acts on the under side of the diaphragm. A given pressure being placed upon the upper side of the diaphragm by means of the hand-screw, the secondary valve is depressed, the high pressure lifts the main valve, and the gas passes through. When the back pressure, acting through the passage on the under side of the diaphragm, equals the pressure exerted by the hand-screw and spring, the secondary valve, being relieved of pressure, is closed by its spring, and a pin-hole in the main valve allowing the high pressure to leak through it into a chamber between the two valves, the pressure above and below the main valve becomes equalized, and it falls of its own weight, closing and shutting off the gas. When the back pressure becomes less than the pressure on the main spring, the diaphragm is pressed by the follower upon the secondary valve, opening it and allowing the high pressure in the chamber to escape, when the main valve is immediately opened again by the high pressure under it, and the gas again passes through. A light spring prevents the main valve from fluttering, and if the valve is used in an upright position this spring enables it to close when the pressure is the same on both sides of the main valve. This regulating-valve gives a uniform pressure in every bottle filled; it can be set on any pressure from 5 to 100 lbs.; it saves much gas and water which without it would blow off at the air-valve; it lessens the breakage of bottles; it saves time and labor; it makes it possible to charge portable fountains, fill siphons and bottles at the same time; it is easily taken apart for cleaning and cannot be put together wrong; and is guaranteed to give satisfaction in every case. The valve is so delicate that (with the light spring in the main valve removed) it may be operated by blowing through it.

This valve is of great value when used with even a small generator, as by preventing waste in venting the bottle, it also prevents a rapid reduction of pressure.

I guarantee satisfaction, and will furnish the regulating-valve on trial to any responsible bottler.

Price \$35

A regulating-valve which may be set on any pressure from 100 to 200 lbs., suitable for regulating the pressure in siphon bottles, can be furnished if wanted at the same price.

A pressure-gauge is necessary on the cylinders to indicate the pressure at which the regulating-valve is set. Pressure-gauge and connection, price \$10.

DOUBLE-ACTION PUMP.

FOR forcing water against pressure, this pump will be found of great utility to the trade. It is very substantially constructed, and is much more compact than those heretofore in use. It can be used by hand; but when practicable, power is better, as it requires much force to pump against pressure. The advantage of such a pump is, that all gas remaining in the cylinders after first contents are exhausted can be utilized; the water being forced in without necessity of removing caps or clamp-joints, which removal tends to loss of gas.

I claim the following advantages for the pump of my make:—

First, By simply removing caps on the four valves (two outlet and two inlet), they can be readily taken out for cleaning, or renewing leathers.

Second, These valves differ from others in double-action pumps, inasmuch as they set directly above one another in the same line, and consequently come back to their seats more readily than when set opposite.

Third, The plunger can easily be removed by simply taking off the cap on top.

Fourth, The inlets and outlets being in the centre, between the valves, water is taken in on one side, and discharged from the other, an advantage any operator will readily see.

Price \$125

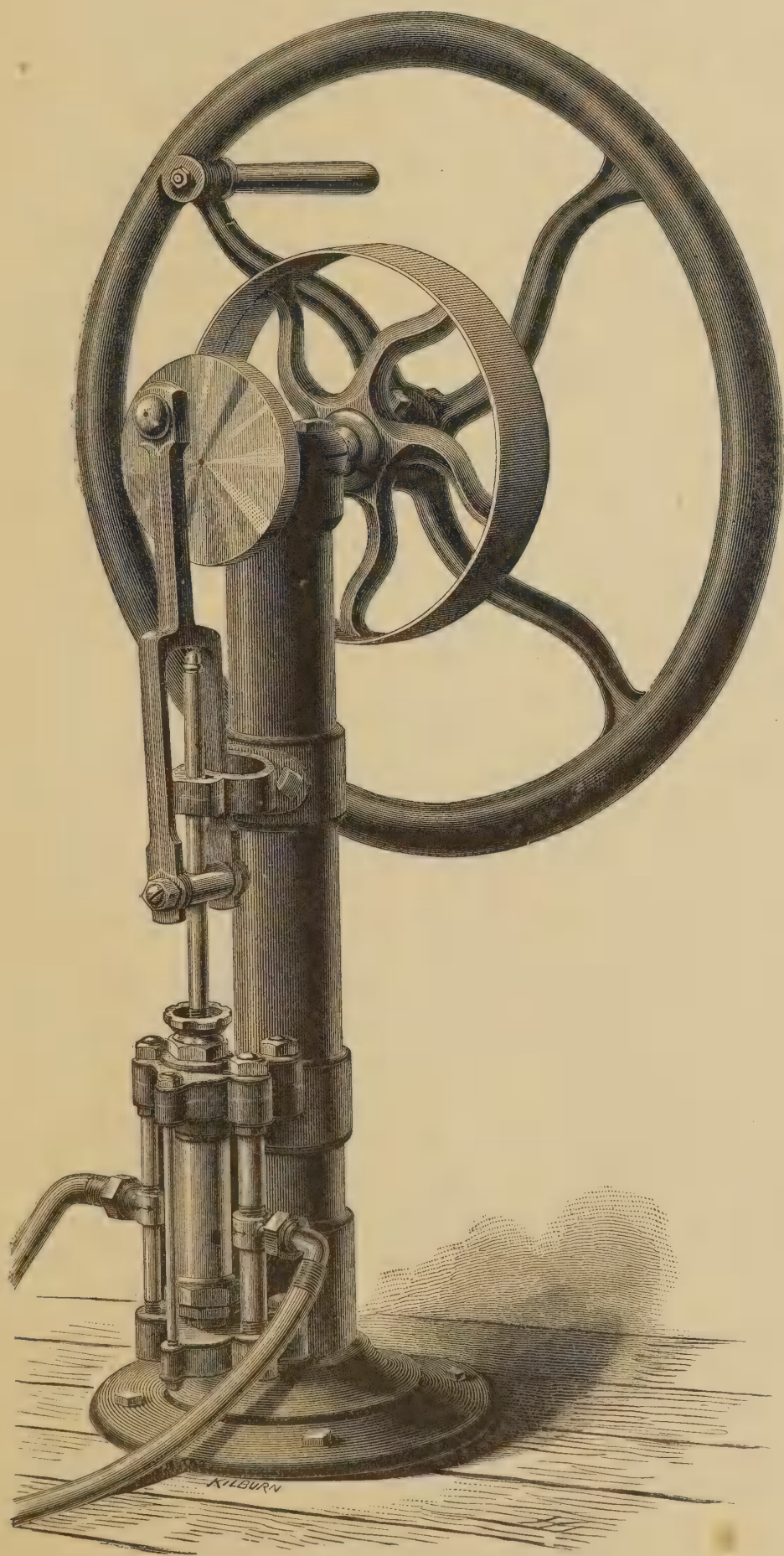
SINGLE-ACTION PUMP.

Similar to above, except that, having but one pumping-stroke, it takes longer to do the same amount of work.

Price \$100

Single-Action Pump for pumping both gas and water. Similar in general appearance to the above, but with pump like that shown on carbonator.

Price \$150



THE TITAN.

(DOUBLE-ACTION FORCE PUMP, WITH AIR-CHAMBER AND CHECK VALVES.)



FOR pumping by power against high pressure, this pump will be found superior to any heretofore made.

It is especially recommended therefore to bottlers who fill siphons, for the following reasons: —

1. It can be run at higher speed than the old double action pump, as, having a broader base and double bearings, it will not “thump” when working rapidly.

2. Having two columns, a large balance wheel, an air-chamber, check valves, oil cups, &c., the strain is evenly distributed and the wear and tear greatly lessened.

3. It will throw as much water as the old double action pump, — 1 gallon to each 12 revolutions, — and being capable of higher speed against high pressure, will deliver water in the fountain from which siphons are filled, much more rapidly.

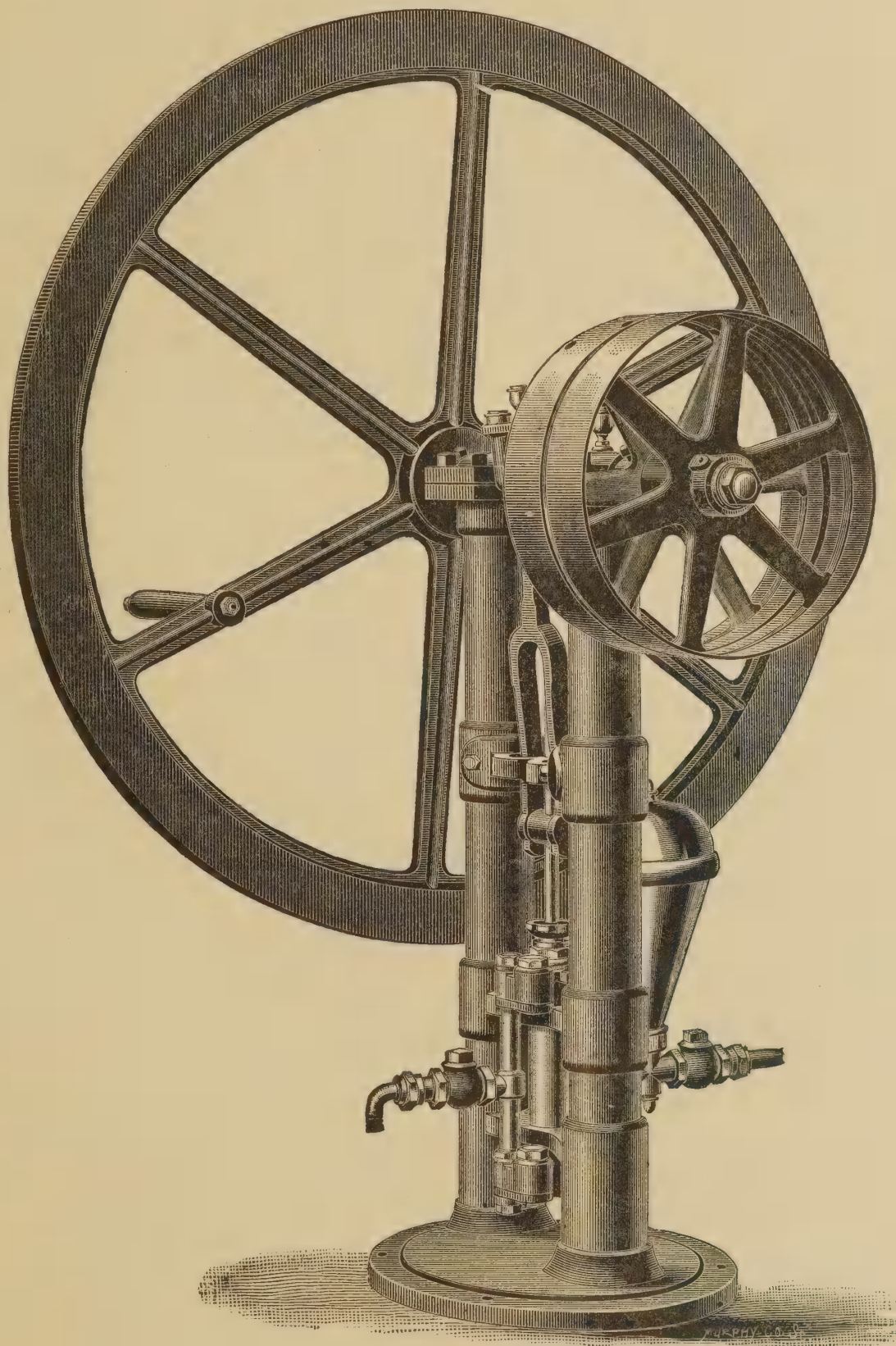
SIZE. — Extreme height, 5 feet 6 inches; diameter of balance wheel, 4 feet 2 inches; diameter of fast and loose pulleys, 1 foot 3 inches; inner diameter of cylinder, 1 $\frac{3}{4}$ inches.

N.B. — In ordering this pump pains should be taken to indicate the position in which it is to be used, as it can be made either right or left.

PRICE.

As illustrated and described	\$175
Pump connection cocks, pipes, and connections, for three fountains	40

For additional fountains, add \$10 each. If for less than three fountains, deduct \$10 each.



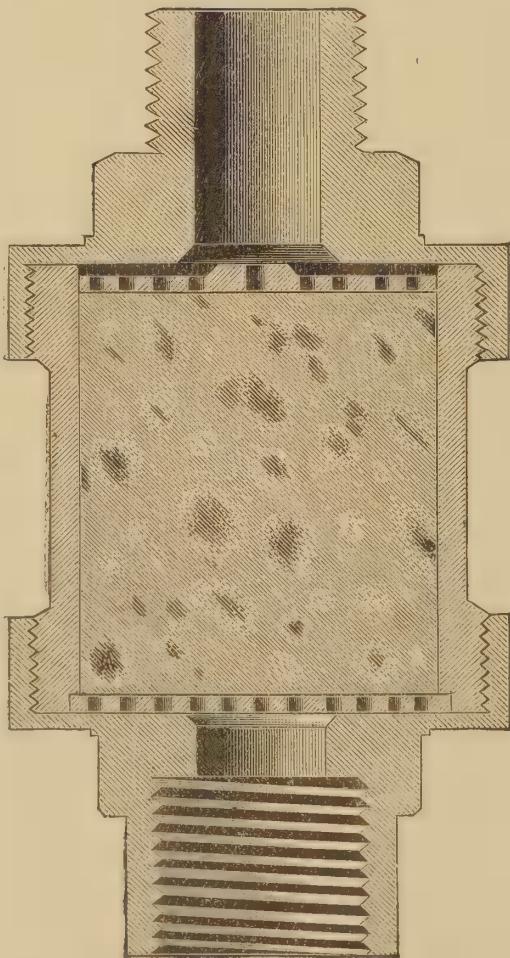
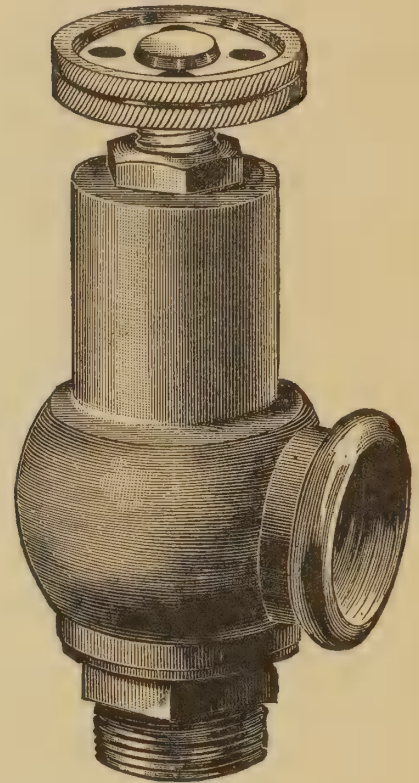
THE TITAN.
(Double-Action Force Pump.)

AUTOMATIC RELIEF VALVE.

(PATENTED.)

THE use of this valve on a pump used for forcing water into a bottling cylinder against pressure, will prevent bursting the cylinder or injuring the pump in case the bottler neglects to stop the pump when the cylinder is filled. The valve can be set at any desired pressure.

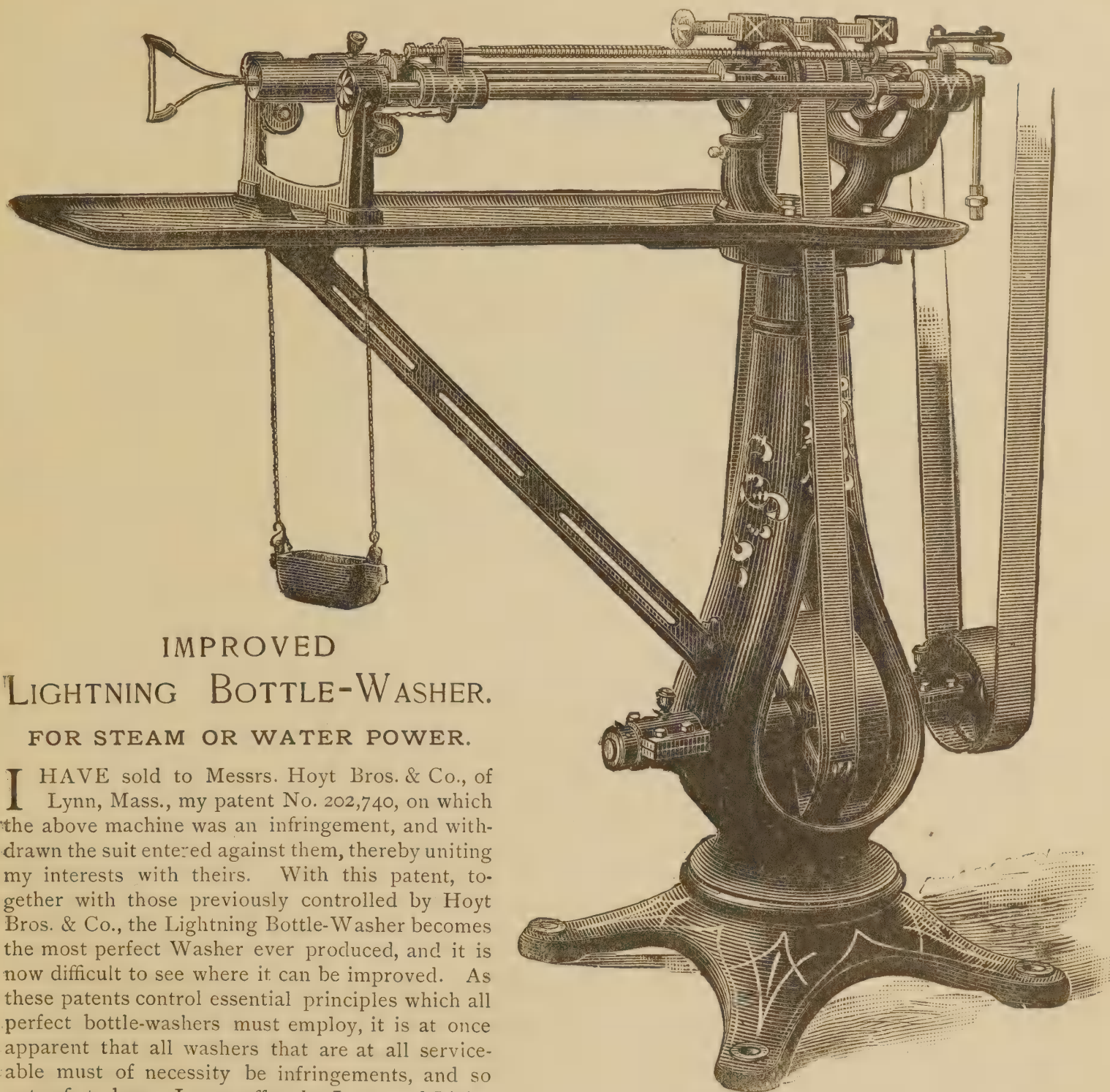
Price \$20



SPONGE FILTER.

THIS filter is made to fit the inlet of a Tufts pump, and is invaluable when the water contains sand, as it not only saves wear and tear on the pump, but supplies pure water in the cylinders. It is electro plated with pure tin.

Price \$5



IMPROVED LIGHTNING BOTTLE-WASHER. FOR STEAM OR WATER POWER.

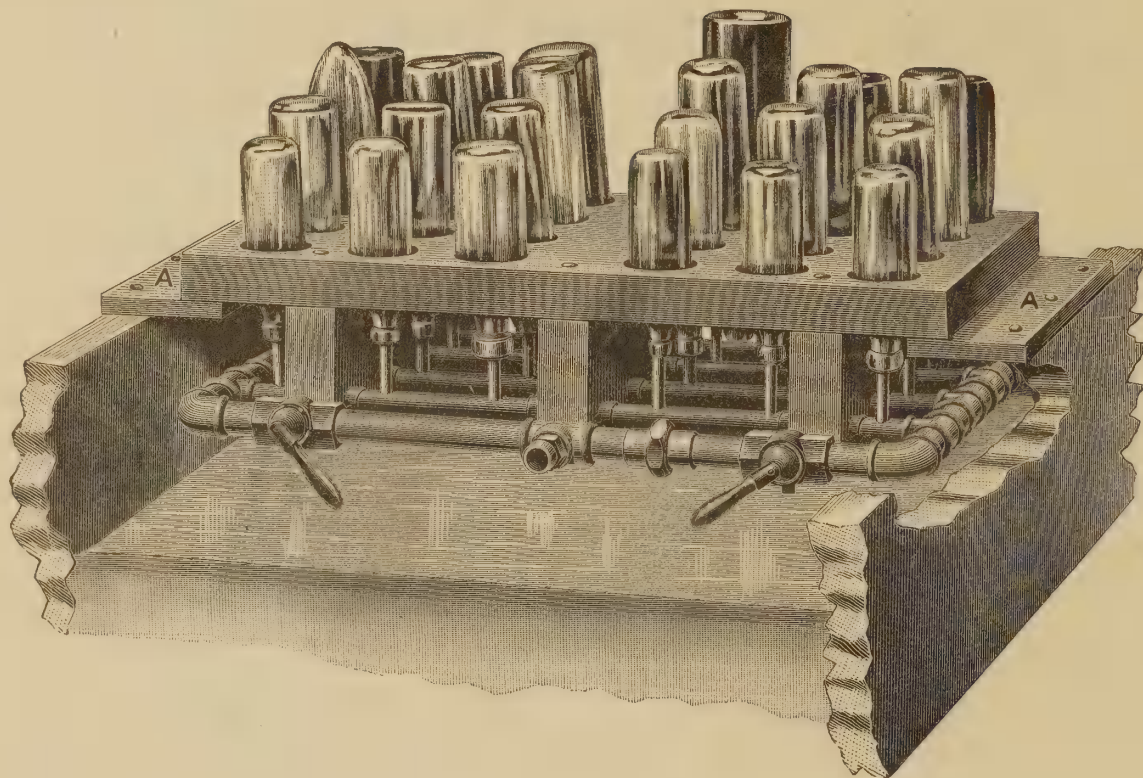
I HAVE sold to Messrs. Hoyt Bros. & Co., of Lynn, Mass., my patent No. 202,740, on which the above machine was an infringement, and withdrawn the suit entered against them, thereby uniting my interests with theirs. With this patent, together with those previously controlled by Hoyt Bros. & Co., the Lightning Bottle-Washer becomes the most perfect Washer ever produced, and it is now difficult to see where it can be improved. As these patents control essential principles which all perfect bottle-washers must employ, it is at once apparent that all washers that are at all serviceable must of necessity be infringements, and so not safe to buy. I now offer the Improved Lightning Bottle-Washer at manufacturers' price, and will guarantee satisfaction. Including 6 dozen springs, 6 dozen brushes, 2 chucks, and 2 wrenches. Brushes for pint mineral bottles only are sent, unless otherwise ordered.

Price \$190

SUPPLIES FOR BOTTLE-WASHER.

Lager brushes, per gross	\$14.00	Springs, per gross	\$14.00
Lager brushes, per dozen	1.25	Springs, per dozen	1.25
Champagne brushes, per gross	17.00	Patent chucks, per dozen	21.00
Champagne brushes, per dozen	1.50	Patent chucks, each	2.00
English Ale brushes, per gross	15.00	Water spring for new machine . . . . .	.35
English Ale brushes, per dozen	1.40	Water spring for old style machine . . . . .	.50

On ordering the Improved Lightning Bottle-Washer, *be particular* to mention the style of bottle to be washed.



BOTTLE-RINSER.

THIS simple and substantial bottle-rinser is intended to be placed across a sink of any width greater than itself. This is done by attaching to the sink the supports, marked *A* in cut, of necessary width. The rinser is constructed of hard wood and galvanized iron tubing, and is provided with two inlet cocks, each side being entirely separate from the other, so that water may at the same time be turned on at one side and off at the other. It is also provided with coupling to attach supply-pipe.

The rinser is arranged to take any size of bottle and hold it upright, as shown in cut.

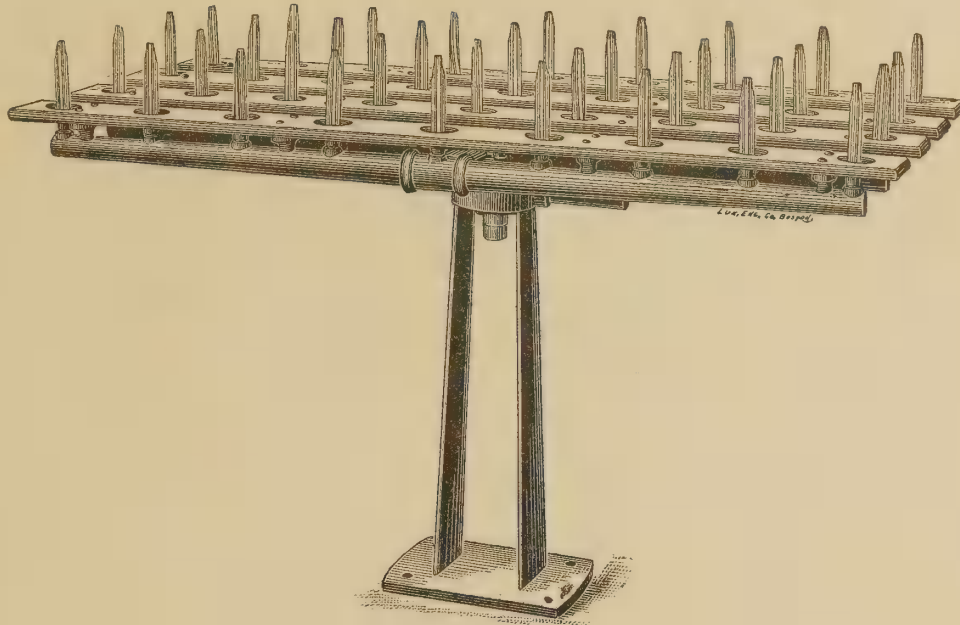
When water is turned on at one side, a powerful jet is thrown inside each of the dozen bottles placed on it; and meanwhile the dozen on the other side may be removed and replaced with others.

We carry this rinser in stock only in two-dozen size, but it can be made to order of any desired capacity.

SIZE. — 16 × 27 inches.

Price \$20

TUFTS' CHAMPION REVOLVING BOTTLE RINSER.



THIS RINSER WILL NOT RUST.

THE SIMPLEST, CHEAPEST, AND BEST.

THIS rinsing machine is made of brass throughout, and of the most approved design, being simple in construction, all parts being made in the most durable manner and by skilled workmen. It will rinse all patent stoppers as well as corked bottles. The water is let on automatically on the back side by turning it round; and while the front side is being filled with unrinsed bottles, those on the back are being rinsed, thus avoiding all loss of time.

This rinsing machine has 36 or 48 tubes, each having four grooves down the sides to allow the water to pass quickly out of the bottle, and where the tubes screw into the pipe, the pipe is cast thick, which gives the tube a firm hold.

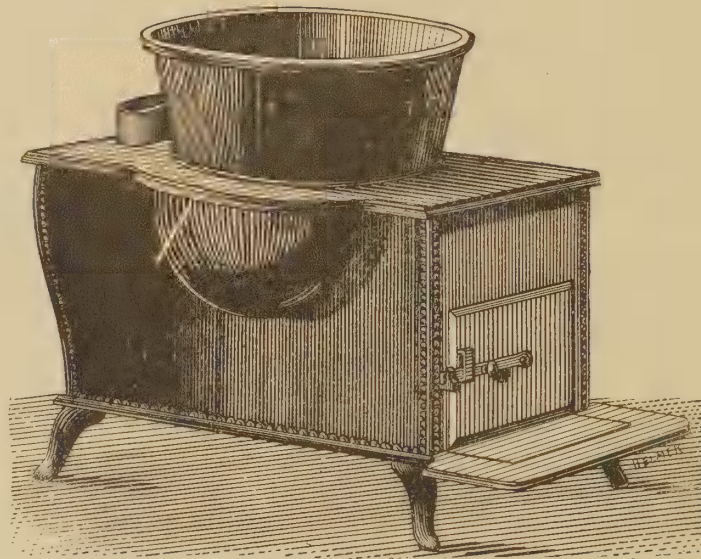
Four small feet are cast on each pipe, on which is firmly screwed a hard-wood slat with large taper holes round each tube to receive the outside of the neck of the bottle and prevent chipping.

Each rinsing machine is tested before leaving the shop, and warranted to be first-class in every respect.

PRICE.

3 dozen size (length, 2 feet 6 inches; width, 1 foot 6 inches; height, 1 foot 6 inches)	\$25
4 dozen size (length, 2 feet 4 inches; width, 2 feet; height, 1 foot 6 inches)	30

Furnished in these two sizes only.



PORCELAIN-LINED SYRUP-KETTLE.

WHERE syrup is made in lots of 10 gallons or more, this kettle is indispensable. Being lined with porcelain, it is very easily kept clean ; and syrup made in it will be free from both metallic and vegetable contamination.

SIZE. — 35 gallons.

PRICE.

For wood	\$40
For coal	46

TIN-LINED COPPER TANK.

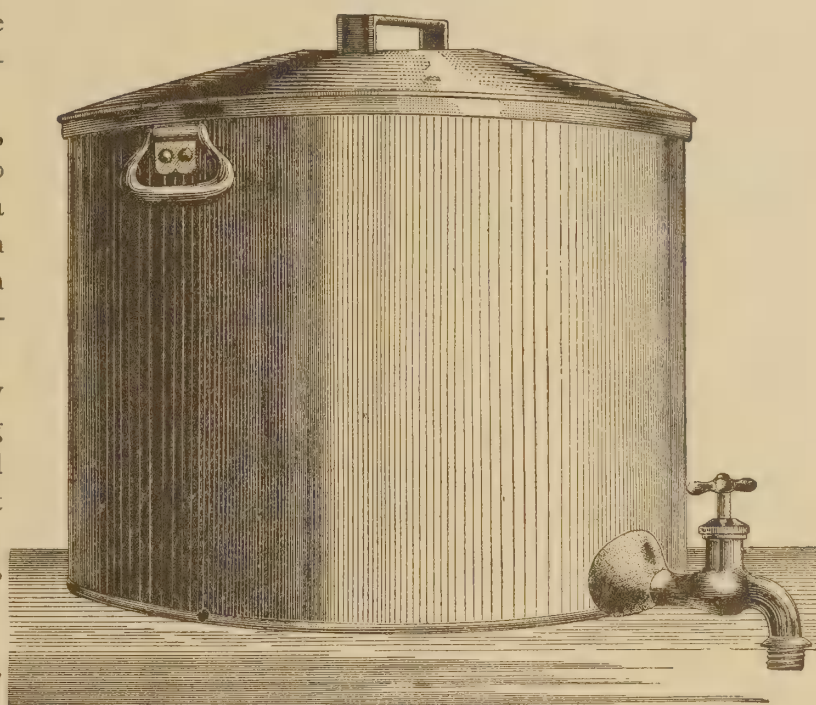
BOTTTLERS consider a tank preferable by far to a tub for mixing and filtering ginger-ale and other syrups.

The tank is made of heavy copper, well lined with block-tin; and the top edge is turned over outward, forming a tubular bead, which serves to hold in place the cord with which the wet cotton cloth—for supporting the filter paper—is retained.

The cock is placed so low that every drop of syrup may be drawn off. Strong handles are provided for moving it, and a substantial cover serves to keep out dust.

SIZE. Diameter, 22 inches; height, 16 inches; contents, 25 gallons.

Price \$17



HYDROMETER AND GLASS.

FOR SYRUP AND ACID.



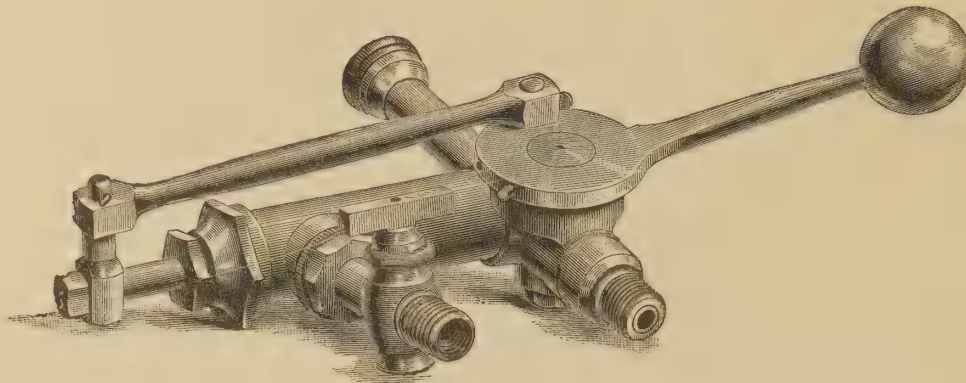
THE Hydrometer is an instrument for taking the specific or comparative gravity of liquids. There are several scales, that most commonly used being Baume's. The various hydrometers used by the bottler are the Saccharometer, the Acidimeter, and the Alcoholometer. The accompanying cut illustrates an Hydrometer combining the Saccharometer and the Acidimeter, which I manufacture and offer to the trade as a useful and necessary article. The Saccharometer does away entirely with the necessity of weights and measures, and their consequent waste and litter. Thirty degrees is the grade of syrup generally used, and represents ten pounds granulated sugar to one gallon of water.

The Acidimeter shows at a glance the strength of the acid, sixty-six degrees being the standard strength of sulphuric acid (oil of vitriol).

Baume's Table, showing amount of sugar in syrup of various degrees, sent with each hydrometer.

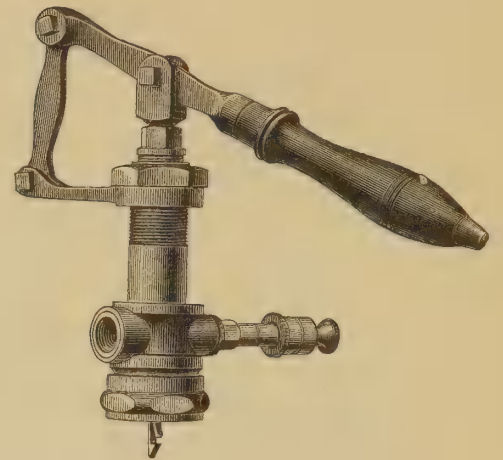
Hydrometer	\$1.50
Hydrometer glass	1.00

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.



SYRUP-GAUGE.

$\frac{1}{2}$ to 1 oz. . \$15. 1 to $2\frac{1}{2}$ oz. . \$20. $2\frac{1}{2}$ to 4 oz. . \$25.



HUTCHINSON ATTACHMENT.

Price . \$10.



METALLIC CAP.

For ginger-ale bottles, per thousand \$1

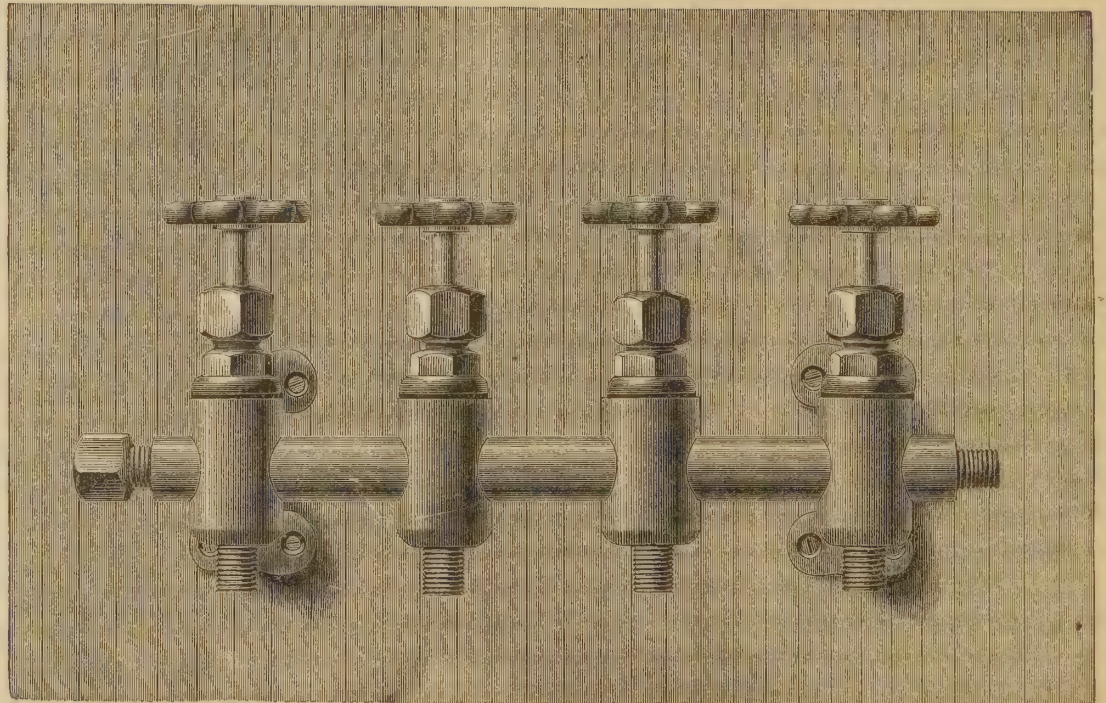
If dealers wish name and address stamped in caps, they will be charged with cost of die, from \$5 to \$15.



TYING-LEVER.

For champagne bottling.

Price, \$1.25 per pair.



MULTIPLE COCK.

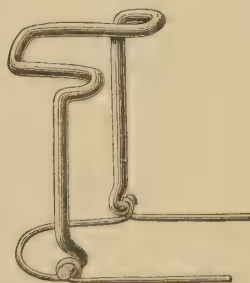
For attaching a number of portable fountains either to a generator or a dispensing apparatus, or one fountain to a number of draught-tubes.

Price \$18



Cork-Holding Tongs.

Price . \$1 each.



Wire Cork-Fastener.

Per gross . . . 50 cts.
In lots of 100 gross and upward . 45 cts.

Pint size will be sent unless otherwise ordered.



Rubber-Faced Cork-Mallet.

3-inch head with $2\frac{1}{2}$ -inch facing.

Price . 80 cts.



PATENTED SEPT. 9, 1879.

DETACHABLE CARBOY TRUNNIONS.

A SIMPLE, practical, and cheap apparatus for emptying carboys, especially of acid contents, safely and quickly, without risk to operator, damage to carboy, or loss of contents.

By actual test they will sustain a weight of over 1,000 pounds.

A device which renders the awkward, unsatisfactory, and often dangerous business of emptying carboys at once safe and simple. It is quickly applied, and so easily managed that a boy can, with its aid, do the work that usually requires the united efforts of two persons.

Every wholesale and retail druggist, manufacturing chemist, soda-water maker, and all others who use carboys, will recognize at a glance that it fully meets an urgent want of the trade.

The apparatus consists of a pair of flanged iron trunnions with screw-points, which are screwed into opposite sides of the carboy, one inch above the middle point. The carboy is then lifted into a frame, or stand; the trunnions falling into their supports, and suspending the carboy a few inches from the floor. In this position it is readily tilted, and emptied of its contents, but resumes an upright position as soon as the hand is removed. In attaching trunnions to carboys, it is best to only start the hole with a small gimlet: the screw-point will bore for itself. The stand consists of cast-iron supports, connected by a wrought-iron pipe and rod, which may be put together in five minutes. For shipment, the parts are secured in a bundle, occupy but little space, and weigh less than twenty pounds, thus reducing freight to the least possible amount. Directions and wrench accompany each set.

PRICE.

Per set, complete	\$3.50
Trunnions only, per pair	1.35

In ordering, please specify "Sets" or "Trunnions" only.

I have succeeded in securing the exclusive sale of this valuable invention, and anticipate an increase of the already large demand for them. No one who has occasion to use carboys can fail to appreciate their value, and desire to obtain them for his use; and, after using, he will regard them as essential for the proper handling of acids, etc., and recommend them to his friends.

SIPHONS.

THE use of siphons is constantly becoming more general, and every dealer will find it to his advantage to supply them to his trade. The cost of natural and artificial spring waters is but trifling, and the demand for them is increasing very rapidly. Few dealers are aware how readily a profitable business can be established in this line. Physicians frequently prescribe plain carbonated waters for their patients, and the home demand for plain beverages is a growing one. The saloon keeper needs plain soda-water and charged mineral-waters, as much as he needs syruped and flavored goods, and will have them, even if he has to go a distance to procure them.

In purchasing siphons, make sure of obtaining good glass. Siphons are charged to a very high pressure, 150 pounds or over.

All siphons of my manufacture are tested when finished to 250 pounds to the square inch, and all defective ones rejected.

As a clear, brilliant glass adds greatly to the appearance of the charged water, care should be taken to obtain only such. The glass used in my siphons is carefully selected, and is from the best French, German, and American manufacturers.

The heads of my siphons are made of block-tin, and are entirely free from lead. I make them in two styles; No. 1 is my patent improved head. Style No. 2 is the old style commonly in use.

My siphons are furnished in 25 ounce, 26 ounce, 37 ounce, and 44 ounce capacities, and 43 ounce, 53 ounce, 55 ounce, and 66 ounce weights.

I also supply the patent octagonal siphon.

Formulas for artificially producing all the popular mineral-waters will be found on pages 64-68.

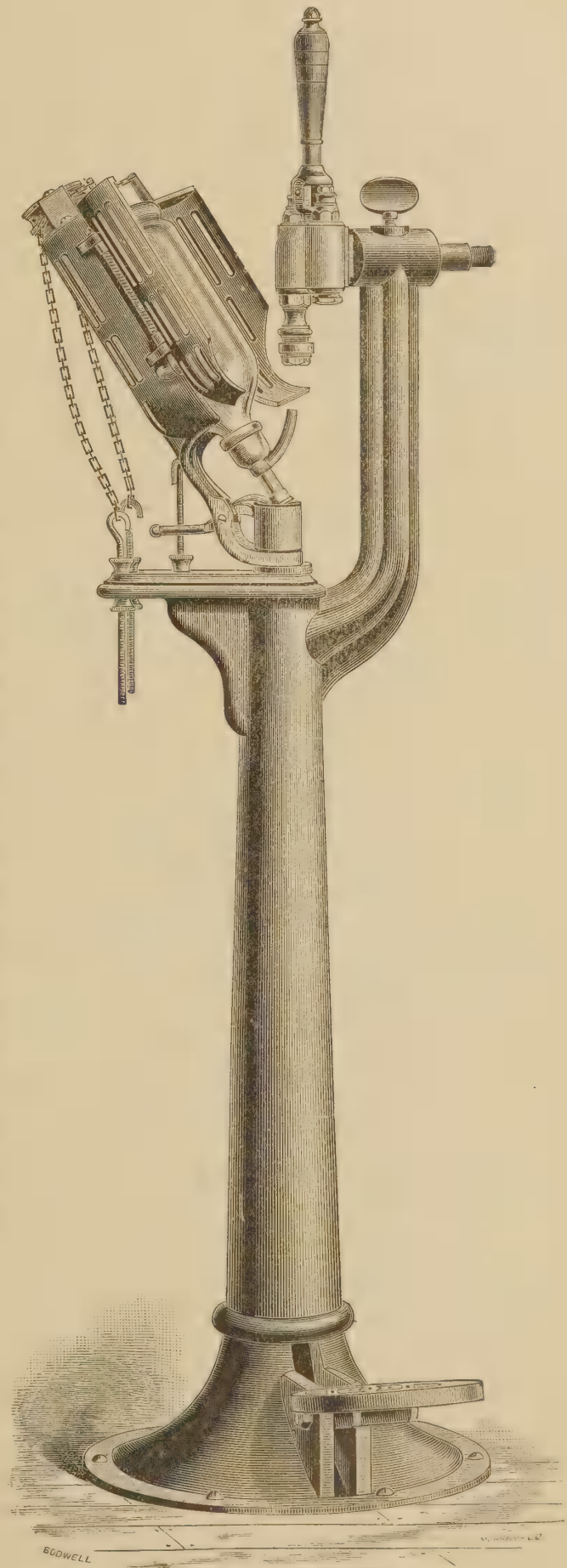
IMPROVED SIPHON FILLER.

THIS is by far the simplest, safest, most easily operated siphon filler yet devised. The safety shield lies wide open, and closes automatically when the foot is placed on the treadle. The bursting of a bottle cannot force it open, — an advantage this shield possesses over all others. The shield opens automatically when the treadle is released. The lever which opens the siphon is operated by an adjustable hook, which may be set for any size of bottle, and after being set is automatic in its action. The filling cock is block-tin lined throughout, and is operated by a lever, which is drawn toward the operator to fill, and pushed from him to vent the bottle. Its operation is easier and quicker than that of any filler made.

This filler attracted much attention at the last bottlers' convention, and is giving perfect satisfaction to all the many bottlers now using it.

Price \$40

If it is desired to fill 44-ounce siphons, please so state when ordering.



SIPHON BOTTLES.



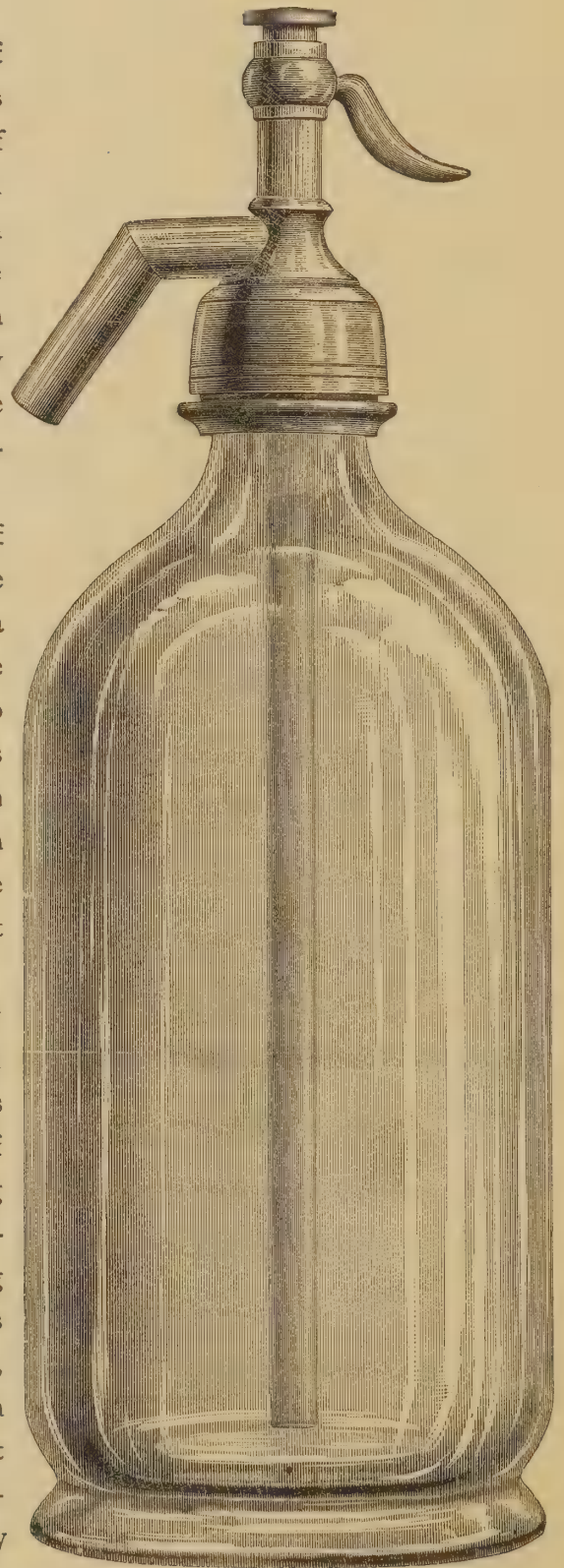
STYLE NO. 1.

PRICE.

	26 oz.	37 oz.	44 oz.
1 to 50	\$0.85	\$0.95	\$1.02
50 to 300	0.80	0.90	0.95
300 to 1,000	0.75	0.85	0.90

THE filling of these bottles is effected by the use of the machine shown and described on page 249, and the water is drawn from them by simply pressing with the thumb on the projecting lever.

The siphons of my manufacture are each tested to a pressure of three hundred pounds to the inch. The heads are formed from hardened block-tin without lead, and are unequalled in point of reliability. **No. 1** represents my new patent, solid-head siphon, and by its use the liability of accidental opening and wasting contents while handling is lessened. It is more easily cleaned, and affords much less space for dirt to collect round collar of head, and by



STYLE NO. 2.

PRICE.

	26 oz.	37 oz.	44 oz.
1 to 50	\$0.83	\$0.93	\$1.00
50 to 300	0.78	0.88	0.93
300 to 1,000	0.74	0.83	0.88

SIPHON BOTTLES.



STYLE NO. 3.

PRICE.

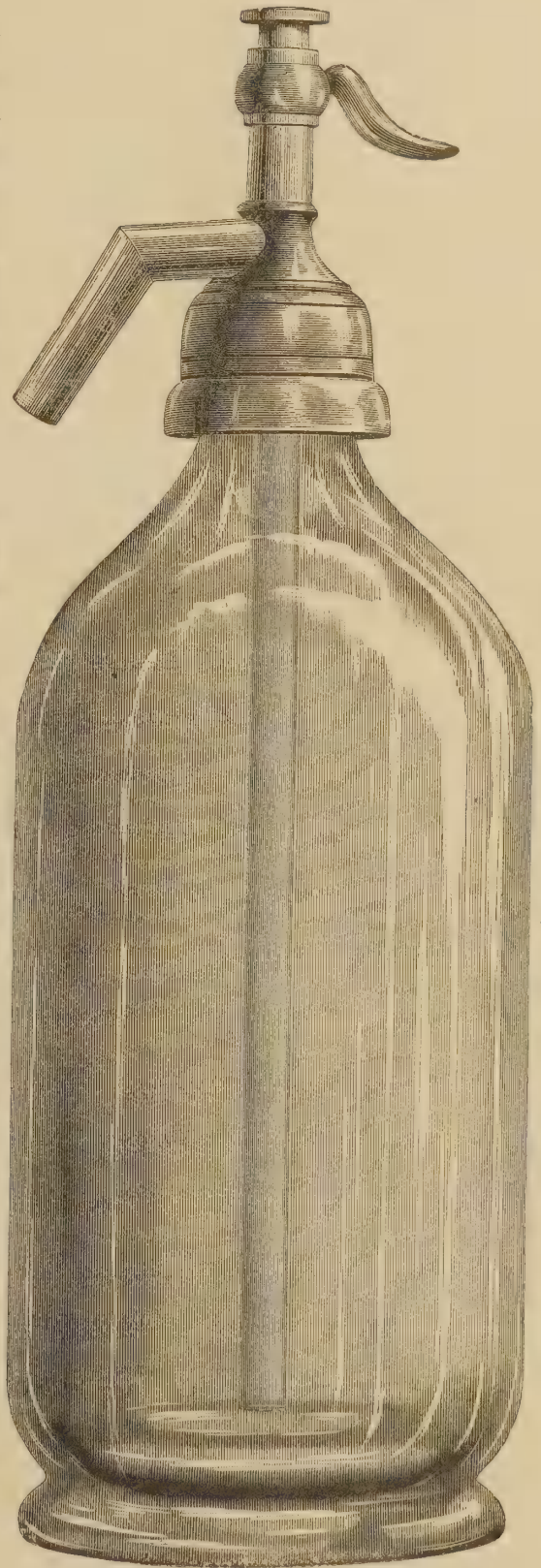
	With No. 1 Head.	With No. 2 Head.
1 to 50 (25 oz.)	\$0.95	\$0.93
50 to 300 (25 oz.)	0.90	0.88
300 to 1,000 (25 oz.)	0.85	0.84

means of slots under patent collar, can be tightened, loosened, or removed, by smaller and more convenient tongs than are used with old style, and the scratching or marring the head by use of tongs is entirely avoided.

No. 2 represents the regular style of head heretofore in use.

No. 3 is the new octagonal siphon. Externally it is similar to the ordinary siphon, but internally it is octagonal in shape. This octagonal form gives a brilliant and sparkling appearance to the carbonated water, and at the same time so strengthens the bottle that it will bear twice the pressure of ordinary siphons. Weight, 50 ounces; capacity, 25 ounces.

No. 4 represents the regular style head with the patent collar.

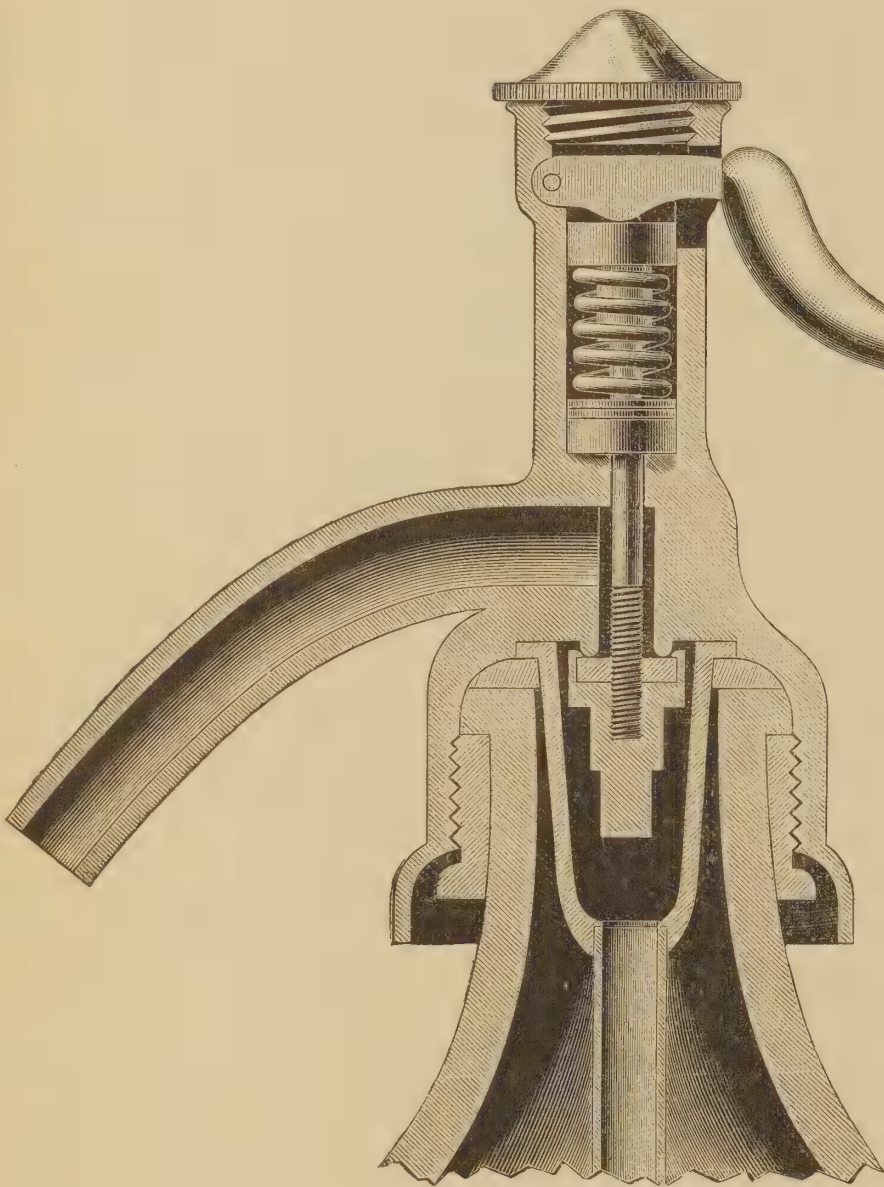


STYLE NO. 4.

PRICE.

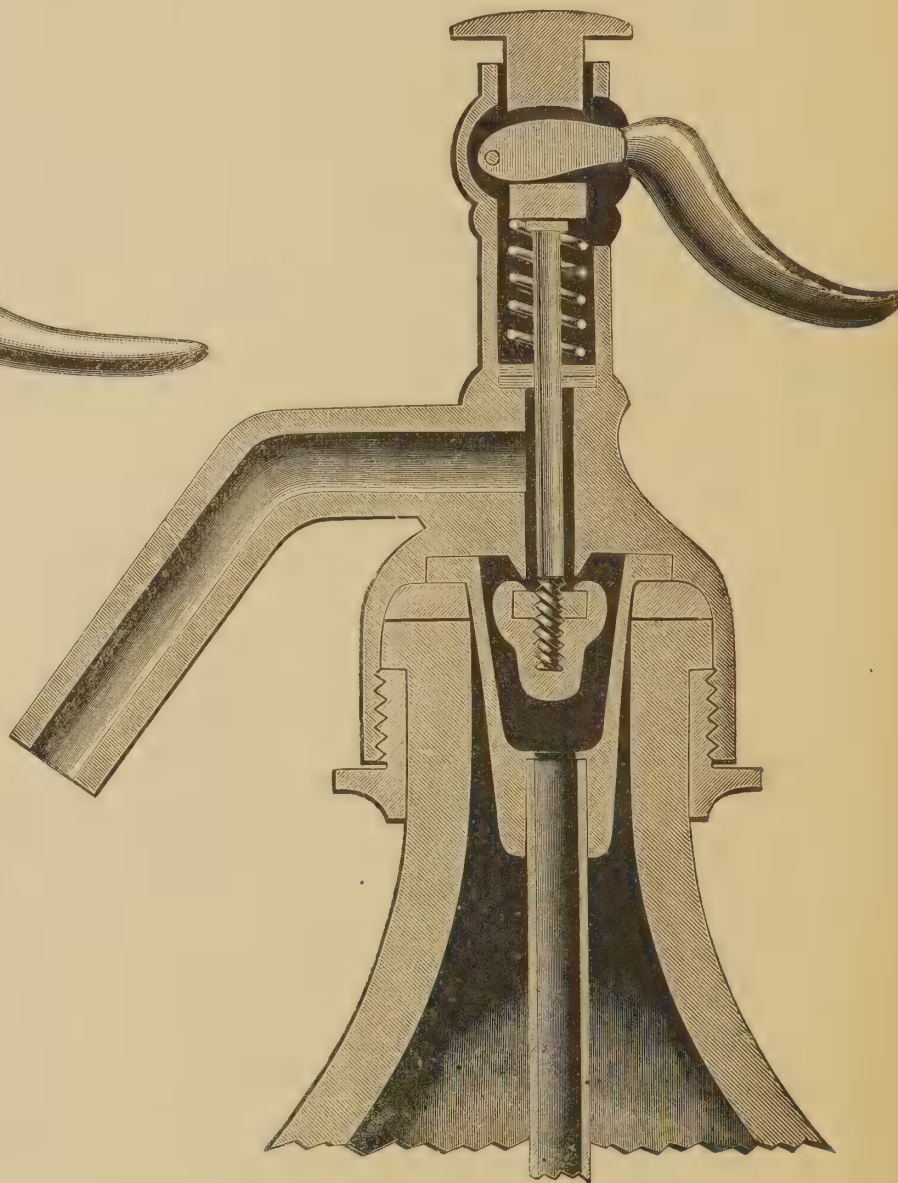
	26 oz.	37 oz.	44 oz.
1 to 50	\$0.85	\$0.95	\$1.02
50 to 300	0.80	0.90	0.95
300 to 1,000	0.75	0.85	0.90

SIPHON BOTTLES.



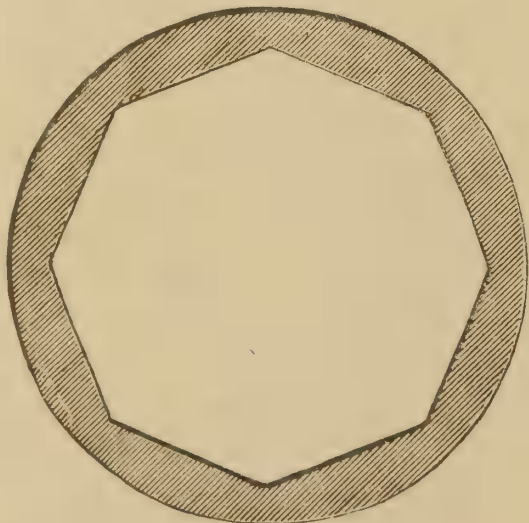
NO. 1.

Sectional view of working part of solid patent head with collar.



NO. 2.

Sectional view of old-style head and collar.



Section of Style No. 3.

The 26 oz. bottle is the standard size, and the Style No. 1 will be furnished when the style is not specified.

Name and address etched on glass, in lots of 50 or more, 6 cents each. In smaller quantities the cost of making the plate will be charged in addition. Heads stamped with name and address in lots of 100 and over without extra charge.

PRICES OF PARTS OF SIPHONS.

Bottle, 26 oz.	\$0.40
" 37 oz. . . . .	.48
" 44 oz. . . . .	.55
Collar . . . . .	.05
Etching, lot of not less than 50, each . . . . .	.06
" lot of less than 50, the plate will be charged for in addition to above price.	
" plate for	2.50
Lever . . . . .	.06
Pin . . . . .	.06
Spindle . . . . .	.10
Spring . . . . .	.05

Tongs for No. 1	\$1.50
" " No. 2	3.00
Top, with collar, tube, and washer . . . . .	.50
Top, without collar, tube, or washer . . . . .	.40
Tube . . . . .	.05
Valve, with washer . . . . .	.05
Washer, collar, rubber . . . . .	.02
" valve " . . . . .	.01
" spindle " . . . . .	.01
" " leather . . . . .	.01
" " metal . . . . .	.02

Bottlers are advised to repair their own siphons.

DOUBLE FOUNTAIN COCK.

THIS convenient device is recommended to bottlers who have a very small siphon business.

Inside the fountain are two separate block-tin pipes, reaching to the bottom.

The cock is thoroughly lined with block-tin pipe.

The pressure-gauge is not absolutely necessary, as the gauge on the generator will indicate the pressure in the fountain.

The double cock is also very desirable for dealers who draw delicate mineral waters which they do not wish to charge with carbonic acid gas; as an air pump can be attached to one of the cocks and sufficient air pumped in to throw out with ample force one half to two thirds of the water, and additional pressure can be pumped in when needed without disconnecting.

PRICE.

Double cock with pressure-gauge	\$20
Double cock without pressure-gauge	12
Copper fountain, 10 gallons, heavily lined with block-tin	40
Lever air-pump with pipes and connections	12

Height of cock, with gauge, 11 ½ inches.
Height of cock, without gauge, 6 inches.



FOUNTAIN WITH DOUBLE COCK AND PRESSURE-GAUGE.

SODA-WATER FLAVORS.

THE fruit juices and flavoring extracts here described are the best that long experience, great care, and ample capital can produce. I have the very strongest incentive, aside from any profit to be derived directly from their sale, in furnishing my customers with the very best article in juices and extracts that money and skill can produce, as the growth in popularity with the public of soda-water, and consequently the sale of soda-water apparatus, depends largely upon the quality of the beverage dispensed. It is well known that the sale of soda-water was phenomenal at the retail drug-store in Boston formerly owned by me. With years of experience, therefore, both as manufacturer and user, I am well aware what the necessities of the trade demand, and propose to supply this demand with goods best calculated to produce the desired result. The juices now offered are from the fruit crop of 1889. They are absolutely pure, were made under my personal supervision, will remain unchanged in any climate, and will not spoil even when the bottle remains open. They are far superior in quality to any previously offered by me and I believe them to be the best in the market, and warrant them to give entire satisfaction to the most exacting dealer. I have recently made extensive changes in the formulas for using my flavoring extracts, with a view to giving the users of them the benefit of recent improvements in methods and proportions for combining syrup, acid, color, and foam with the flavors in order to produce the best result. The enormous sale of my Vanilla Extract, the most expensive extract on the list, is a flattering indication that the trade appreciates a first-class article. The sale of my Hub Ginger-Ale Extract to the bottling trade has also been large, and great satisfaction has been expressed by many users. I propose to send hereafter with every package of extract such complete directions for use, that, taken in connection with some improvements in the goods, the result of careful experiment, they cannot fail to produce beverages which will be selected by the discriminating as the choicest.

FOR BOTH DISPENSERS' AND BOTTLERS' USE.

Pure Fruit Juices.

These juices are prepared from sound, ripe fruit, and preserved without sugar; they retain the natural flavor of the fruit, will remain unchanged in any climate, and will not spoil even when the bottles remain open. Furnished only in quart champagne-bottles.

	Per case of 12 bottle.
BLACKBERRY	\$6.00
CHERRY	6.00
FRUITINA, a blended juice of delicate flavor	6.00
GRAPE	6.00
MALTESE ORANGE, a blended fruit juice with an incomparable flavor, unexcelled for use with phosphates. For either dispensing or bottling	6.00
PINEAPPLE, particularly fine	6.00
RASPBERRY, particularly fine	6.00
STRAWBERRY	6.00
WILD CHERRY	6.00
Assorted dozens furnished at same prices if ordered.	

Flavoring Extracts.

Packages are charged extra for all goods in bulk: 1-gal. jugs, 20 c.; 2-gal. jugs, 35 c.; 3-gal. jugs, 50 c.; 5-gal. kegs,

75 c.; 10-gal. kegs, \$1.00. No charge made for pint bottles, packing-cases, or carting.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
BANANA	\$1.25	\$6.00	\$5.00
BIRCH BEER . . . . .	.75	4.50	4.00
CARAMEL COLOR . . . . .	.50	1.25	1.00
CHOCOLATE	1.25	6.00	5.00
COFFEE, condensed . . . . .	.50	3.50	3.25
Is made from selected Male Berry Java Coffee. Will remain unchanged in any climate. The coffee produced from it is free from the bitter taste commonly found in coffee, and the delicate aroma is preserved. Price, per dozen pints, \$5.00.			
CREAM SODA, a combination which produces a very salable drink	\$1.75	\$8.00	\$7.50
FRUIT ACID (Citric Phosphate Solution), needed in all fruit-flavored syrups	0.50	2.50	2.00
FRUIT COLOR, used in syrups of the red fruits	1.50	10.00	9.50
GINGER-ALE, Hub	4.50	30.00	25.00

This is a highly concentrated extract, soluble in any proportion, of fine flavor, bottles a brilliant Ginger-Ale, will not precipitate, is easily handled, and produces more goods

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

than six times the amount of any other. Will make a Ginger-Ale for dispensing equal to the finest bottled article. One pound will make 700 dozen half-pints, or nearly 12,000 9-ounce glasses. Price, in 5-lb. lots, per lb., \$4.00.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
NECTAR	\$1.25	\$6.00	\$5.00
NERVE TONIC	1.00	5.00	4.00

This makes an excellent drink. Its wholesome and agreeable bitter taste is one that grows upon the consumer. One gallon of the extract makes nearly 6,000 8-ounce glasses, or nearly 375 dozen half-pint bottles of this popular beverage.

OTTAWA BEER, always popular	\$0.75	\$4.50	\$4.00
PERUVIAN BEER, unsurpassed for quality and salability . . . . .	.75	4.50	4.00

One gallon of the extract will make 2,000 10-ounce glasses, or 175 dozen half-pint bottles of either Ottawa or Peruvian Beer.

PINEAPPLE	\$1.25	\$6.00	\$5.00
RASPBERRY	1.25	6.00	5.00
ROOT BEER, wholesome and salable . . . . .	.75	4.50	4.00
SARSAPARILLA . . . . .	.75	4.50	4.00
SARSAPARILLA COLOR, for all goods requiring an amber color . . . . .	.50	1.25	1.00
SODA FOAM, liquid, the most effective article made for the purpose. Used in almost every variety of syrup . . . . .	.50	2.50	2.00
STRAWBERRY	1.25	6.00	5.00
SUGAR COLOR . . . . .	.50	1.25	1.00
VANILLA, concentrated, an unequalled specialty. Without exception, the best extract of Vanilla in the market	2.00	12.00	10.00
WINTERGREEN, or CHECKER-BERRY	1.25	6.00	5.00
YELLOW VEGETABLE COLOR, needed in Banana, Orange, Orange Flower, and Pine-apple syrups	1.50	10.00	9.50

Double-Vanilla Chocolate Paste.

The Chocolate syrup is prepared from this paste quickly and without trouble, as it simply requires dissolving in hot plain syrup. The paste will keep for years in any climate, and will not spoil even when open. When dissolved, it will remain in suspension. The beverage produced from this paste cannot be excelled by any preparation of cocoa. Per dozen 1-lb. cans, \$5.00. Single cans, 50 cts.

Tufts' Citric Phosphate.

Used exactly as Citric Acid is used, for which it is a complete substitute. Citric Phosphate is sold at one price throughout the year, and Citric Acid is rarely as cheap. Unexcelled for use at the soda-water counter; dissolved in water and squirted from an essence bottle. Unequalled in Orange Phosphate, the most salable of all the bottled beverages of recent introduction. More agreeable than Tartaric Acid, goes farther, and costs less.

S. D. LONG, Sc. D., Professor of Chemistry, Chicago Medical College, says: "The addition of Phosphates to our food is as rational, and frequently as necessary, as the use of common salt. In this way they act in preventing many disorders, and are not medicines, but foods."

Kegs of 100 lbs., 45 c. per lb.; kegs of 50 lbs., 48 c. per lb.; kegs of 25 lbs., 50 c. per lb. Jars of 10 lbs., 52 c. per lb.; jars of 5 lbs., 55 c. per lb. No charge for packages.

When next in need of Juices or Extracts try these goods; you will continue to use them.

Filter Paper.

No. 33, per 100	\$0.60	No. 33, per 500	\$2.00
" 50, " . . . . .	.90	" 50, "	4.00
" 80, "	4.00	" 80, "	17.50

West-India Lime Fruit Juice.

Prepared expressly for the soda-water counter and for bottled Ginger-Ale. Per gallon (package extra), 90 cents.

Marble Dust.

Price, per barrel, delivered free on board in New York, in lots not less than 5 barrels, \$1.50.

Mineral-Water Salts.

PER PACKAGE SUFFICIENT FOR 10 GALLONS.

Apollinaris	\$1.00	Seltzer	\$1.00
Congress	1.00	Spa	1.00
Excelsior	1.00	Star	1.00
Kissengen	1.00	Sulphur	1.00
Saratoga	1.00	Vichy	1.00

Six packages, assorted if desired, \$5.00.

These Salts are composed of such materials as will reproduce, both in taste and chemical properties, the various mineral-waters for which they are intended. Great care is taken in their preparation, and, as a chemical analysis of the natural water is the basis of their manufacture, they contain the same medicinal qualities.

Dry Soda Foam.

Dry Soda Foam, in 4-ounce packages, each	\$0.25
For Bottlers, per dozen packages	2.00

FOR BOTTLERS' USE ONLY.

	Per pt.	Per gal.	Per gal. in 5-gal. lots.
BOUQUET FLAVOR, for Ginger-Ale, in which it produces the bouquet so much admired	\$2.00	\$12.00	\$10.00
CHAMPAGNE CIDER	1.00	5.00	4.50
GINGER-ALE, soluble, easily used	1.00	5.00	4.50
LEMON, soluble, particularly recommended	1.00	5.00	4.50
ORANGE, soluble, for use in Lemon Soda, Ginger-Ale, and Orange Phosphate	1.00	5.00	4.50
PEAR CIDER	1.25	6.00	5.00
TONIC BEER. This root beer has been a standard article in the Eastern market for more than 25 years . . . . .	.75	4.50	4.00

Tufts' Solid Belfast Ginger-Ale Extract.

Produces a particularly brilliant Aromatic Ginger-Ale, equal, and by some considered superior, to the imported article. Neatly put up in tin cans securely soldered. My "Hint" circular with each package. Two No. 80 filter papers with each 10-lb. package.

In 10-lb. cans, per lb.	\$1.00
In 1-lb. cans, per lb.	1.50
One pound will make 28 dozen quarts, or 75 dozen half-pints.	

GINGER-ALE EXTRACTS.

THERE are four Ginger-Ale Extracts made: one for dispensing and three for bottling.

"Tufts' Ginger-Ale Extract Concentrated" is for use at the dispensing counter, and is a highly concentrated fluid extract.

"Tufts' Ginger-Ale Extract Soluble" is a concentrated fluid extract, which makes a clear and brilliant beverage for bottling.

"Tufts' Solid Belfast Ginger-Ale Extract" is a concentrated extract, about the consistency of dough; it has an aromatic flavor, and makes, when bottled, a clear and brilliant beverage.

"Tufts' Hub Ginger-Ale Extract" is condensed to about the consistency of syrup, is easily handled, produces a large amount of goods, and bottles a clear, brilliant, and highly aromatic beverage.

In ordering care should be taken to clearly indicate which is wanted.

The Cost of Ginger-Ale made from Tufts' Solid Extract.

Quarts.

1 pound Solid Extract	\$1.00
40 pounds Granulated Sugar, at $7\frac{3}{4}$ cents	3.10
8 gallons Water . . . . .	.00
10½ ounces Fruit Acid (1 pound Citric Acid at 55 cents, in water 1½ pints) . . . . .	.17
4 ounces Tufts' Dry Soda Foam . . . . .	.25
2¼ " Tufts' Caramel Color, at \$1.25 . . . . .	.03
28 dozen Corks, at 4 cents	1.12
66 gallons Charged Water, at ½ cent . . . . .	.33
	<u>\$6.00</u>

Making 28 dozen quarts, costing $21\frac{1}{2}$ cents per dozen.

Half-Pints.

1 pound Solid Extract	\$1.00
40 pounds Granulated Sugar, at $7\frac{3}{4}$ cents	3.10
8 gallons Water . . . . .	.00
10½ ounces Fruit Acid . . . . .	.17
4 " Tufts' Dry Soda Foam . . . . .	.25
2½ " Tufts' Caramel Color, at \$1.25 . . . . .	.03
75 dozen corks, at 4 cents	3.00
50 gallons Charged Water, at ½ cent . . . . .	.25
	<u>\$7.80</u>

Making 75 dozen half-pints, costing $10\frac{1}{2}$ cents per dozen.

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

The Cost of Ginger-Ale made from Tufts' Hub Extract.

2	ounces	Tufts' Hub Ginger-Ale Extract, at \$4.50 per pound	\$0.50½
2	"	Magnesia . . . . .	.30 " "
45	pounds	Granulated Sugar . . . . .	.07¾ " "
2¾	ounces	Caramel	1.25 " gallon
11	"	Citric Phosphate . . . . .	.55 " "
55	"	Tufts' Lime Juice . . . . .	.90 " "
8	gallons	Water . . . . .	.00 " "
47½	"	Soda-Water . . . . .	.00½ " "
75½	dozen	Corks . . . . .	.50 per gross
Total,			<u>3.14½</u>
			\$7.97½

Making 75½ dozen half-pint bottles (containing 7 ounces each), costing per dozen 10½ cents, and selling for 35 cents, or 59 dozen imported ginger-ale bottles (containing 9 ounces each), costing per dozen 13½ cents, and selling for 50 cents.

Cost of the Finest Quality of Ginger-Ale.

[Put up in Quart Bottles, Including Bottles, Shipping Cases, etc.]

2	ounces	Tufts' Hub Ginger-Ale Extract at \$4.50 per pound	\$0.50½
2	"	Magnesia . . . . .	.30 " "
45	pounds	Granulated Sugar . . . . .	.07¾ " "
11	ounces	Citric Phosphate . . . . .	.55 " "
2¾	"	Caramel	1.25 " gallon
55	"	Tufts' Lime Juice . . . . .	.90 " "
8	gallons	Water . . . . .	.00 " "
61¼	"	Soda-Water . . . . .	.00½ " "
31	dozen	Corks . . . . .	.50 " gross
31	"	Quart Apolinaris Bottles (containing 25½ ounces each)	.32 " dozen
31	"	Tying Wires . . . . .	.50 " M
1½	pounds	Tin Foil . . . . .	.50 " pound
62	dozen	Labels	1.00 " M
31	"	Shipping Cases . . . . .	.15 cents each
Total,			<u>4.65</u>
			\$22.29½

Making 31 dozen quart-bottles. Costing per dozen 72 cents and selling for \$2.00.



Sample Order.

I WILL send the following sample lot of extracts neatly and securely packed to any address, on receipt of \$25.00, and, upon first order only, freight charges will be deducted from bill. They are guaranteed equal to the best in the market, and are certain to give satisfaction to the user.

1	pound	Hub Ginger-Ale Extract	\$4.50
5	"	Citric Phosphate	2.75
1	pound	Silk Finish Magnesia . . . . .	.30
1	gallon	Lime Juice and Jug	1.10
1	"	Sarsaparilla Color and Jug	1.45
1/2	"	Soda Foam and Jug	1.65
2	pints	Extract Sarsaparilla	1.50
2	"	Tonic Beer Extract	1.50
2	"	Birch " "	1.50
1	"	Extract Lemon, soluble	1.00
1	"	Bouquet Flavor	1.00
1	"	Nerve Tonic Extract	1.00
1	"	Extract Strawberry	1.25
1	"	Orange Phosphate Extract	1.50
1	"	Ginger-Ale Extract, soluble	1.00
1	"	Fruit Color	1.50
50	No. 50	French Filter Paper . . . . .	.50
			<u>\$25 00</u>

PRICE-LIST OF SUNDRIES.

Bottle-Washer.

Hoyt's Lager Brushes, per gross	\$14.00	Sieberlich's Brushes, per gross	\$20.00
" Lager Brushes, per dozen	1.25	Slocomb's Whalebone Brushes, per dozen	1.25
" Champagne Brushes, per gross	17.00	" Brush Spring, each . . . . .	.25
" Champagne Brushes, per dozen	1.50	" Chuck, each . . . . .	.25
" English Ale Brushes, per gross	15.00	Tufts' Bristle Brushes, per dozen	1.25
" English Ale Brushes, per dozen	1.40	" Wire Brushes, per dozen	1.50
" Springs, per gross	14.00	" Rubber Brushes, per dozen	1.25
" Springs, per dozen	1.25	" Rubber Brushes, wired, per dozen	1.50
" Patent Chucks, per dozen	21.00	" Chuck, each . . . . .	.25
" Patent Chucks, each	2.00		

Bottling-Apparatus Sundries.

Agitator, latest style for No. 200	\$30.00	Plug for Blow-off Cock	\$3.75
" for C Copper Generator	35.00	Plug Cock for Water-Gauge	1.25
" for No. 100 Cylinder	20.00	Power Pulley for No. 150 Generator	6.00
" for Matthews' OO Generator	5.00	" for No. 150 Cylinder	6.00
" for Blades, 8 in set, for No. 200	11.00	Relining No. 2 Matthews' Iron Generator	50.00
" for No. 3 Copper Cylinder, style 1887	25.00	" No. 2 Bottling Cylinders with sheet block-tin	17.00
" for No. 250	35.00	" D Copper Generator	25.00
Band for Copper Cylinder	2.75	" No. 2 Matthews' Iron Cylinder and Purifier	50.00
Barrel for Blow-off Cock	2.00	" No. 2 Matthews' Iron Cylinder, only	40.00
Body Cap for No. 100 Generator	1.00	Retinning 20-gallon Bottling Cylinder	15.00
Body Cap for No. 150 Generator	1.75	" 40-gallon Bottling Cylinder	18.00
Bolts and Nuts for Vitriol-Pot, each . . . . .	.25	" 45-gallon Bottling Cylinder	20.00
Bottom for Water-Gauge, without Horns	6.25	Rods for Water-Gauge . . . . .	.50
Brass Band for 150 set, each	5.00	Rubber Gasket, per lb.	1.50
Copper Tunnel for Jumbo Generator	5.00	Rubber for Washers, per square foot	2.00
Diaphragm for Regulating-Valve . . . . .	.25	Seat for old style Blow-off Cock	1.00
Funnel for Generator . . . . .	.75	Siphon-Filler Packings with metal-tube in hole . . . . .	.30
Glass for Water-Gauge . . . . .	.75	Tipping Vitriol-Stem	1.00
Horns for Water-Gauge, each	1.50	Top for Water-Gauge, without horns	5.00
Handle Rod and Nut for Wheel . . . . .	.75	Valve for Blow-off Cock	1.75
Lead Acid-Valve Seat Nos. 100 to 200	1.00	Valve Seat (conical) for 750 Generator	3.50
" " Nos. 250 to 1,000	2.25	Washers (rubber) for Blow-off Cock, each . . . . .	.08
Lead Funnel for Jumbo	3.25	Washers for Double-Action Pump, per set . . . . .	.40
Lead Pitcher	2.00	Wheel for Blow-off Cock . . . . .	.25
Leather for Washers, per square foot . . . . .	.80	Wheel and Plug for Blow-off Cock	3.00
Packing for Agitator, each . . . . .	.50		
Packing Purifier Cock . . . . .	.25		
Piecing-out Stem for Vitriol-Pot	1.25		

Bottling-Table.

Air Valve for new style Filling Head	\$5.00	Mask for Bottler	\$1.25
Automatic Hook for Hutchinson's Attachment	1.50	Packing for Filling-Head, Tufts' or Matthews', per dozen	4.50
Ball for Bottling-Table	2.40	Packing for Filling-Head, each . . . . .	.50
Bottling-Cock for Bottling-Table or Filling Head	3.86	Plain Hook for Hutchinson's Attachment . . . . .	.50
Copper Syrup-Can, tinned, 5 gallons, with glass gauge and pipe	7.00	Shield for No. 1 Bottling Machine	3.50
Filling-Head for Bottling-Table	8.00	Spring for Bottling-Bench	4.00
Filling-Head and Nut	3.00	Spring for Syrup-Pump . . . . .	.10
Guide-Hook for Hutchinson's Attachment	1.50	Stud for Putnam Syrup-Gauge . . . . .	.75
Hutchinson Stoppers, per gross	2.50	Trip for Syrup-Pump	1.00
		Valve for Syrup-Pump . . . . .	.30

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

Coolers.

Patented Cup-Cooler for 10-syrup Standard	\$35.00	Cylinder, 20 X 3 inches	\$3.10
Renewing Cup-Cooler	15.00	" 19 X 3 "	3.00
Relining Patent Standard Cup-Cooler . .	15.00	" 18 X 3 "	3.00
Gridiron for 8-syrup Standard	6.00	" 17 X 3 "	2.90
" for 10-syrup Standard	7.25	" 17 X 2 "	2.90
Renewing Gridiron for 8-syrup Standard .	5.00	" 16 X 3 "	2.90
" " for 10-syrup Standard	6.25	" 14 X 3 "	2.80
Mineral Coil-Cooler	3.50	" 12 X 3 "	2.70
Cylinder, 14 X 4 inches	3.75	" 12 X 2 "	2.75
" 27 X 3 "	4.00	" 10 X 2 "	2.50
" 26 X 3 "	3.87	" 10 X 3 "	2.60
" 24 X 3 "	3.50	" 8 X 3 "	2.50
" 22 X 3 "	3.25	" 8 X 2 "	2.40
" 22 X 2 "	3.10	Relining Cylinder-Coolers, one half list-price for new.	

For sheet-tin lined Cylinder-Coolers, add 50 per cent to above prices.

Prices are for Coolers complete with Pipes and Coupling; but Supply-Pipes, if wanted, are extra.

Copper Fountain.

Band	\$2.25	Handle for 10-gallon Fountain	\$0.45
Collar . . . . .	.50	" for 6-gallon " . . . . .	.40
Fountain Cock, No. 1, lower half	1.10	Iron Frame for Fountain	7.00
" " No. 1, upper half	1.10	Pipe for Fountain Cock . . . . .	.25
" " No. 2, Cap . . . . .	.50	Relining Fountain	5.50
" " No. 2, Stem	1.00	" " with sheet block-tin	9.00
" " No. 2, Stuffing-Nut . . . . .	.35	Ring for 14-gallon Fountain	2.00
" " No. 2, Spindle and Wheel	1.25	" for 10-gallon "	2.00
" " Screw . . . . .	.15	" for 6-gallon "	1.75
" " Washers, 4 kinds, per doz. . . . .	.15	Spanner-Wrench . . . . .	.50
Handle for Fountain Cock . . . . .	.50	Wheel for Fountain Cock . . . . .	.50
Handle for 14-gallon Fountain . . . . .	.50		

Couplings.

Bottom Couplings for Supply	\$0.25	Male Coupling for Arctic Tumbler-Washer	\$0.30
" Drain-Pipe Coupling . . . . .	.50	Matthews' Female Coupling, large	1.00
Clamp . . . . .	.50	" " " small . . . . .	.75
Clamp-Joint . . . . .	.40	" Male Couplings and Clamp-Joint combined	1.00
" for Rubber Charging-Pipe . . . . .	.63	Matthews' Steel Fountain Coupling	1.00
Equalizing and Connection-Pipe Couplings, each . . . . .	.75	" Female and Clamp-Joint combined	1.25
Female Coupling . . . . .	.20	Morse Female Generator-Coupling . . . .	.75
" for Rubber Charging-Pipe . . . . .	.63	" Couplings to fit Morse Fountain and Sterling Generator	1.25
" for Economist Generator . . . . .	.60	Wiring Couplings to Rubber Charging-Pipe	.25
Knee or Elbow Coupling . . . . .	.30		
Male Coupling . . . . .	.15		

Draught-Tubes.

Alaska Single-Stream Soda-Water Draught-Tube	\$12.50	Patent Double-Stream Draught-Tube, Zenith style	\$33.00
Goose-Neck Mineral Draught-Tube, with Cooler, Pipes, and Couplings, complete .	15.00	Patent '74 Double-Stream Draught-Tube, second-hand, replated and repaired . .	25.00
Orleans Mineral Draught-Tube	15.00	Patent '69 Double-Stream Draught-Tube, second-hand, replated and repaired . .	15.00
Patent Double-Stream Draught-Tube, Ball style	35.00	Patent '82 Double-Stream Glass-Bulb Tube	35.00
Patent Double-Stream Draught-Tube, Goose-Neck style	35.00	Straight Mineral Draught-Tube, with Connections and Cooler	12.50

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

Draught-Tubes — *continued.*

Straight Mineral Draught-Tube, without Connections and Cooler	\$9.00	Zenith Solid-Head Mineral Draught-Tube, with Connections and Cooler	\$18.00
Straight Mineral Draught-Tube, with Connections and Cooler, extra short	10.00	Exchange of any Double-Stream Tube for '74 Patent Draught-Tube	25.00

Draught-Tube Parts.

Acorn for Draught-Tube Wheel	\$0.30	Rubber Nozzle for Small Mineral Draught-Tube	\$0.25
Cap for Mineral Draught-Tube . . . . .	.50	Seat for '69 Draught-Tube . . . . .	.25
Check-Nut . . . . .	.10	Spanner-Wrench for Mineral Draught-Tube . . . . .	.25
Collar for '74 Draught-Tube . . . . .	.75	Spindle for Patent Draught-Tube . . . . .	.50
Draught-Tube Thimble . . . . .	.25	“ for '72 Draught-Tube . . . . .	.25
“ Wrench . . . . .	.35	Spring for Patent Draught-Tube . . . . .	.25
Glass Bulb for '82 Tube . . . . .	.50	“ for '69 Draught-Tube . . . . .	.15
Head for '74 Draught-Tube, complete	20.00	Spring-Holder for Patent Draught-Tube . . . . .	.50
“ for '69 Draught-Tube, second-hand	6.00	Stop-Cock for '69 Draught-Tube	1.75
Improvement '74 for '73 Draught-Tube . . . . .	.75	“ for '74 Draught-Tube	3.25
Key to '74 Draught-Tube . . . . .	.50	Stream-Screw for '69 Draught-Tube . . . . .	.25
Mead Attachment	2.50	Sleeve for Stop-Spindle of '74 Zenith Tube . . . . .	.30
Metal Nozzle, Silver-Plated	1.00	“ for Stop-Cock of '82 Draught-Tube . . . . .	.20
“ Tip for Patent Draught-Tube . . . . .	.15	Valve for Patent Draught-Tube . . . . .	.25
“ Valve for '69 Draught-Tube . . . . .	.15	Valve-Holder for '72 Draught-Tube . . . . .	.50
Regulating Nut for '72 Draught-Tube . . . . .	.50	Washer-Holder for '69 Draught-Tube . . . . .	.30
“ Screw for Patent Draught-Tube . . . . .	.35	Washers for Patent Draught-Tube, per set . . . . .	.17
Repiping '69 Patent Draught-Tube	1.25	“ for Patent Draught-Tube Head, per set . . . . .	.12
“ '74 Patent Draught-Tube	2.00	“ for '69 and Swing-Around Draught-Tubes, per set . . . . .	.07
“ '74 Counter Draught-Tube . . . . .	.75	“ for '72 Draught-Tube, per set . . . . .	.12
“ '82 Patent Draught-Tube	1.50	“ Hexagon, for '74 Draught-Tube, each . . . . .	.05
“ '74 Zenith Patent Draught-Tube	1.25	“ for '82 Draught-Tube, per set . . . . .	.10
“ Alaska Draught-Tube	1.25	Washer-Holder Nut for Pat. Draught-Tube	1.25
“ Mineral Draught-Tube	1.25	Wheel for Mineral Draught-Tube	1.25
“ Challenge Draught-Tube	4.50	“ for '74 Draught-Tube	1.50
“ Swing-Around Draught-Tube	1.50	“ for Swing-Around Draught-Tube	1.25
“ Orleans Mineral Draught-Tube	1.25	Wrench for '74 Draught-Tube, per set . . . . .	.35
Robbins' Attachment	5.00		
Rubber Nozzle for Soda Draught-Tube . . . . .	.35		
“ for Zenith Mineral Draught-Tube . . . . .	.30		

Glass.

Basin for No. 1 Crystal Fountain, with Collar	\$2.75	Glass for Pressure-Gauge	\$0.10
Basin for No. 2 Crystal Fountain, with Collar, large	3.75	Globe for Congress Draught-Stand	5.00
Basin for No. 2 Crystal Fountain, with Collar, small	2.75	Globe for Water-Attachment, Ruby-threaded	7.00
Bulb for No. 1 Crystal Fountain, with Collar	1.25	Graduate, 3 ounce . . . . .	.40
Bulb for No. 2 Crystal Fountain, with Collar	3.50	“ 4 “ . . . . .	.75
Cup for Lemon-Squeezer . . . . .	.30	“ 8 “	1.00
Dome for Water-Attachment	5.00	“ 16 “	1.25
“ for Crescent	1.50	Hot-Soda Sign for Salamander, Ruby Glass	1.50
“ for Druggist	2.00	Mirror for Manitoba	1.00
“ for Tumbler-Washer	1.50	“ for Magnolia	1.00
Frosted Convex Glass for Brilliant	1.50	“ for Crusader	18.00
Gas-Shade for Albion	1.50	“ for Orleans	30.00
“ for Congress	1.50	“ for Emperor	8.40
Glass for Bouquet-Holder . . . . .	.75	Nozzle for Matthews' Draught-Tube . . . . .	.30
		“ “ Mineral Draught-Tube . . . . .	.25
		Soap-Bottle	1.25
		Smoke-Bell for Dalmatian . . . . .	.35

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

Lightning Shaker.

Bail for old style Shaker, complete, with Double Couplings, Nickel-Plated	\$3.60	Rosewood Cam without Fittings	\$0.15
Bail for new style Shaker, complete, Nickel- Plated	2.00	Rosewood Handle for Crank . . . . .	.20
Bottom Cup and Base, Nickel-Plated	1.80	Rubber Gear . . . . .	.50
Brace	2.00	Rubber-Washer for Cover . . . . .	.12
Brass Slide	1.20	Rubber-Washer for Cup . . . . .	.05
Cam for Bail, complete . . . . .	.30	Screws for Bail-Coupling, each . . . . .	.05
Clamping-Bolt . . . . .	.15	Screws for Connecting-Rod, each . . . . .	.12
Connecting-Rod, Japanned . . . . .	.60	Screw for Cam, Nickel-Plated . . . . .	.05
Crank, complete . . . . .	.60	Small Gear-Wheel and Bar . . . . .	.96
Crank, Iron only . . . . .	.30	Top-Cover, Nickel-Plated, with Washer	1.56
Hard-Wood, Disk, or Washer polished . . . . .	.15	Turn-Buckles, per pair . . . . .	.60
Frame, new pattern, Japanned and Babbitted	3.60	White-Metal Gear . . . . .	.35
Iron Washer for Clamp-Bolt . . . . .	.05	Wire for Bail, Nickel-Plated . . . . .	.60
Large Gear-Wheel and Bar	1.56	Wood Gear . . . . .	.50
		Wrench . . . . .	.25

Marble.

Cover for 8-syrup White Standard	\$6.00	Cover for 10-syrup Winooski Standard	\$14.00
" for 8-syrup Tennessee Cottage	12.00	" lower half, for Italian Bardiglio Cyprus	12.00

Name-Plates.

Arctic Name-Plate, large	\$5.00	Scroll Mineral Plate, especially engraved	\$1.75
" " small	2.50	Syrup-Plate . . . . .	.35
Butterfly Mineral-Plate	1.00	" Holder and Ring . . . . .	.80
" " especially engraved	1.50	" Ring . . . . .	.30
New Mineral Name-Plate with Chains	3.25	" especially engraved . . . . .	.85
Scroll Mineral Plate	1.25	" Siberian . . . . .	.75

Pipes.

Block-Tin Pipe, 4 ounces, per foot	\$0.15	Rubber Charging-Pipe, complete	\$5.00
" " 6 ounces, per foot . . . . .	.25	Rubber Drain-Pipe, 1/2 inch, per foot . . . . .	.25
" " 8 ounces, per foot . . . . .	.30	" " 3/4 inch, per foot . . . . .	.35
Double Drain-Pipe Thimble . . . . .	.75	Supply-Pipe, 3 feet, with Female Coupling and Clamp-Joint . . . . .	.90
Guttapercha Pipe, per foot . . . . .	.50	T Pipe for Siphon-Filler . . . . .	.50
Lead Pipe, for Charging-Pipe, per foot . . . . .	.25	Upright Drain-Pipe . . . . .	.40
Rubber Charging-Pipe, per foot . . . . .	.35		

Plating.

Acorn for '72 Draught-Tube	\$0.10	Glass Dome-Pan	\$7.50
Alaska Draught	2.50	" " with Spun Bottom	11.00
" Name-Plate and Filling	1.50	Glass Dome-Cap	6.50
Apparatus Screw . . . . .	.03	Gothic Arctic Name-Plate and Filling	1.50
Aurora Corner	2.25	Index Draught-Stand	11.00
Bolt, with Nuts . . . . .	.06	" " No. 4	10.00
Cap for Draught-Tube . . . . .	.25	Large Draught-Tube	4.00
Cap for Syrup-Bottle . . . . .	.10	Large Pat. Zenith Draught-Tube	4.00
Change-Stand	2.50	Large Solid-Head Zenith Draught-Tube	2.75
Cover-Top . . . . .	.02	Large Fancy Mineral Draught-Tube	2.75
Cottage Bouquet-Holder	1.50	Large Name-Plate and Filling	1.75
Crystal Fountain	5.00	Large Cottage Hinge	1.50
Despatch Hinge . . . . .	.60	Magic Cock, 8-syrup size	7.50
Dow's Style Mineral-Tube	2.00	" 6-syrup size	6.25
Dow's Style Syrup-Gate	1.25	" 4-syrup size	5.00
Draught-Tube Stop-Cock . . . . .	.60	Meteor Corner . . . . .	.60
Draught-Tube Head, '74	1.50	Mineral-Tube Cap, Spindle, and Wheel . . . . .	.60
Gas-Cock . . . . .	.25	Mineral Butterfly Name-Plate and Filling . . . . .	.25

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

Plating—continued.

Mineral Scroll Name-Plate and Filling . . .	\$0.35	Swan-Neck and Tip for Tumbler-Washer . .	\$0.20
Mirror-Knob . . . . .	.50	Swan-Neck Holder	1.00
Mustache-Cup	1.25	Syrup-Plate and Filling . . . . .	.12
New Style Counter Draught-Tube	4.00	“ Holder . . . . .	.12
Nozzle to Draught-Tube . . . . .	.25	“ Holder-Ring . . . . .	.15
No. 1 Tumbler-Washer	18.00	“ Holder and Plate, complete . . .	.42
No. 2 Tumbler-Washer	14.00	Syrup-Faucet complete . . . . .	.75
No. 3 Tumbler-Washer Trimmings	4.00	“ Handle . . . . .	.20
No. 1 Tumbler-Holder, each	1.00	Trimmings, 6.1 Standard	12.00
No. 2 Tumbler-Holder, each . . . . .	.50	“ 6.2 “	14.00
Patent '69 Draught-Tube	3.25	“ 6.3 “	16.00
Patent Design Name-Plate and Filling . . .	.50	“ 8.1 “	14.00
Reaper Pinnacle	1.25	“ 8.2 “	16.00
Rival Hinge	2.25	“ 8.3 “	18.00
Siberian Door . . . . .	.60	“ 10.1 “	16.00
“ Faucet	1.50	“ 10.2 “	18.00
“ Frame, 4-door	2.90	“ 10.3 “	20.00
“ Frame, 5-door	3.60	Tumbler-Washer Pedestal . . . . .	.35
“ Frame, 6-door	4.30	“ Pan No. 1	10.00
Small Cottage Hinge . . . . .	.75	“ Pan No. 2	6.00
Small Plain Mineral Draught-Tube	1.50	“ Swivel . . . . .	.12
Sparkle Alaska Draught-Tube	3.00	Wheel for '69 Draught-Tube . . . . .	.50
Standard Apparatus Hinge . . . . .	.40	“ for '72 Draught-Tube . . . . .	.75
Statue Patented Draught-Tube	5.00	Zenith Pillar	3.50
Style A Tumbler-Holder, each . . . . .	.75	“ Chain . . . . .	.25

Siberian Sundries.

Bar-Handle for Syrup-Faucet	\$0.75	Spring for Syrup-Faucet	\$0.06
Collar for Faucet . . . . .	.25	Syrup-Faucet, Block-Tin	4.00
Door, without Syrup Name-Plate	2.25	“ Block-Tin Lined	4.00
Relining Glass-Lined Faucet . . . . .	.75	“ Glass-Lined	7.00
Rubber Cover for Glass Jar . . . . .	.25	Syrup Name-Plate . . . . .	.75
Spring for Door . . . . .	.05	Tongs for Syrup-Tank	1.50

Statuettes.

Bronze Figures, with Gas, each	\$7.00	Hebe Statuette	\$3.00
“ “ without Gas, each	6.00	Rebronzing Statuettes	2.00
Bronze Sphinx	4.00	Statuette, Shade, and Stand	10.00

Sterling Generator.

Agitator and Stuffing-Nut No. 1	\$12.00	Bottom-Flange and Nut for No. 1 Gen- erator	\$5.00
“ “ “ Nos. 2 and 3	8.25	Bottom-Flange and Nut for Nos. 2 and 3 Generator	4.00
“ without Stuffing-Nut, Nos. 2 and 3 . . .	6.50	Charging-Pipe	5.00
Agitator-Crank No. 1	1.25	“ or Generator Female Cou- pling . . . . .	.63
“ Nos. 2 and 3 . . . . .	.75	“ Clamp-Joint . . . . .	.63
“ Nut . . . . .	.38	“ Wiring-Couplings, each . . . . .	.13
Alkali-Chamber No. 1, with Copper Head .	133.00	Dasher for Agitator	2.50
“ No. 2, with Brass Head	45.00	Equalizing-Pipe and Couplings for No. 1 .	2.00
“ No. 3, with Brass Head	36.00	“ “ “ for Nos. 2 and 3	2.50
“ Cap No. 1	1.75	French Clamp No. 1	3.00
“ Cap Nos. 2 and 3 . . . . .	.75	“ Nos. 2 and 3	2.00
Band for No. 1	2.50	“ Ring	1.00
“ for Nos. 2 and 3	2.25	“ Cap . . . . .	.50
“ for Vitriol-Pot No. 1	2.00	“ Iron Bridge . . . . .	.50
“ for Vitriol-Pot Nos. 2 and 3	1.75		
Blow-off Cock No. 1	7.50		
“ “ Nos. 2 and 3	6.00		

JAMES W. TUFTS' DESCRIPTIVE CATALOGUE.

Sterling Generator — *continued.*

Gauge	\$9.00	Renewing Top Part of Vitriol-Pot No. 2 . . .	\$13.00
Iron Stand No. 1	9.00	“ Top Part of Vitriol-Pot No. 3 . . .	11.00
“ No. 2	7.25	“ Half of Purifier, Nos. 2 and 3 . . .	9.00
“ No. 3	6.75	Replacing Brass Head of Alkali-Chamber	
“ Ring No. 1	3.00	with Copper Head complete, No. 2 . . .	28.00
“ Ring No. 2	2.75	Replacing Brass Head of Alkali-Chamber	
“ Ring No. 3	2.25	with Copper Head, complete, No. 3 . . .	22.00
“ Leg No. 1	2.00	Repairing Gauge	3.00
“ Leg Nos. 2 and 3	1.50	Rubber-Washers for new style Safety-Valve . . .	.15
Lead Acid-Valve Seat . . . . .	.75	Safety-Valve	15.00
“ Funnel, large	1.00	“ Spiral Spring . . . . .	.10
“ Funnel, small . . . . .	.50	“ in Exchange for Old	7.50
“ Part of Vitriol-Stem	2.50	Step, for Agitator . . . . .	.50
“ Pipe for Charging-Pipe, per foot . . .	.25	Seat and Cap for old style Safety-Valve . . .	1.00
“ Pitcher	2.00	Square Part of Vitriol-Stem	1.00
Lever to Safety-Valve . . . . .	.50	Spindle Part of Vitriol-Stem	2.00
Purifier No. 1	30.00	Safety-Valve Connection for Generator . . .	2.00
“ Nos. 2 and 3	16.50	Top Flange for No. 1	4.00
“ Cock	3.50	“ for Nos. 2 and 3	3.00
“ Cock-Handle . . . . .	.35	Two new Horns, with Gauge and Safety-	
“ Pipe No. 1	2.25	Valve Connections	10.00
“ Pipe Nos. 2 and 3	1.75	Valve for Blow-off Cock	1.75
Purifier Plug . . . . .	.50	Vitriol-Pot No. 1	65.00
“ Cap . . . . .	.50	“ No. 2	35.00
“ Check-Nut . . . . .	.38	“ No. 3	30.00
Relining No. 1	50.00	“ Pipe No. 1	2.25
“ No. 2	30.00	“ Pipe Nos. 2 and 3	1.75
“ No. 3	25.00	“ Cap . . . . .	.50
“ Alkali-Chamber No. 1	25.00	“ Plug . . . . .	.50
“ Alkali-Chamber No. 2	16.00	“ Collar . . . . .	.50
“ Alkali-Chamber No. 3	12.00	Vitriol-Stem, complete to Valve	15.00
“ Vitriol-Pot No. 2	10.00	Vitriol-Stem, loaded with Lead, without	
“ Vitriol-Pot No. 3	9.00	Stuffing-Box	2.50
“ Purifier	4.00	Vitriol-Stem, Nickel-Plated, without Stuff-	
Reloading Vitriol-Stem	1.50	ing Box	4.50
“ Vitriol-Valve	1.50	Vitriol-Stem Handle	1.12
“ Cap, each . . . . .	.10	“ Tube	1.00
Renewing Bottom Part of Vitriol-Pot No. 2 . . .	24.00	Washers, per set, No. 1 . . . . .	.50
Renewing Bottom Part of Vitriol-Pot No. 3 . . .	21.00	“ per set, Nos. 2 and 3 . . . . .	.37
Renewing Copper Alkali-Chamber with		Washers for Purifier, each . . . . .	.10
Lining, using old Brass Head and Trim-		“ for Blow-off Cock, each . . . . .	.08
mings, No. 2	28.00	“ for Purifier-Cock, each . . . . .	.05
Renewing Copper Alkali-Chamber with		Wheel for Blow-off Cock . . . . .	.25
Lining, using old Brass Head and Trim-		Wrench, large . . . . .	.80
mings, No. 3	22.00	“ small . . . . .	.45

Syrup-Faucet, Block-Tin Lined.

Acorn	\$0.15	Relining Syrup-Faucet	\$0.75
Bar Handle . . . . .	.75	Spring . . . . .	.06
Brush . . . . .	.25	Syrup-Faucet, complete	4.00
Cap . . . . .	.50	“ second-hand	3.00
Cover for Syrup-Can . . . . .	.62	“ in exchange for Old	2.50
Handle . . . . .	.40	“ Siberian Style	4.00
Nut . . . . .	.10	Thimble . . . . .	.20
Plug . . . . .	.60		

Syrup-Faucet, Glass-Lined.

Acorn	\$0.25	Glass-Tube	\$1.00
Back-Plate	1.00	Handle . . . . .	.40
Bar-Handle . . . . .	.75	Nut . . . . .	.25
Cap . . . . .	.50	Relining Glass-Lined Faucet	4.00
Glass-Lined Syrup-Faucet, complete	7.00	Rubber Plug . . . . .	.30
Glass-Lined Syrup-Faucet, complete, Siberian Style	7.00	Spring . . . . .	.06
		Washers for Glass Syrup-Jar, each . . . . .	.05

Tumbler-Washer.

Arm	\$1.75	Silver-Plated Cap for Glass Dome	\$13.00
Bouquet-Holder, metal	2.50	Socket for Swivel-Stem . . . . .	.10
Bell Water-Attachment, complete	30.00	Spoked Rubber Washer for Scylla . . . . .	.50
Bell Attachment, without Globe	5.50	Spring for Maelstrom . . . . .	.03
“ “ Turbine . . . . .	.50	Spring . . . . .	.02
“ “ Striker . . . . .	.50	Spindle for Scrannage Washer . . . . .	.50
Bouquet-Holder and Glass	3.25	Stand Drain-Pipe . . . . .	.75
Check-Nut for Tumbler-Washer . . . . .	.25	Stop-Cock and Coupling	2.00
Double-Valve Spindle for Bate Washer, each . . . . .	.25	Straight Tube and Tip . . . . .	.75
Exchanging New Maelstrom Working-parts for Old Style	50.00	Strainer . . . . .	.50
Fans . . . . .	.25	Strainer-Box for Maelstrom . . . . .	.80
Filter	6.00	Swan-Neck and Tip	1.25
Fish-Globe Attachment	15.00	Swivel . . . . .	.50
Goose-Neck . . . . .	.75	Swivel-Point for Maelstrom . . . . .	.50
Interior Jet for Maelstrom	1.20	Swivel Stem . . . . .	.25
Jets for Bate Washer, per dozen	1.50	Tip . . . . .	.50
Nut . . . . .	.20	Top Basin for Scrannage Washer No. 1	2.00
Pedestal, complete	6.00	“ “ “ “ No. 2	1.75
Point . . . . .	.06	Tumbler-Washer Check-Nut . . . . .	.25
“ Socket . . . . .	.20	Turbine Attachment, without Pedestal	2.50
Porcelain Bowl, Decorated, with Doherty Cock	20.00	Valve for Scrannage Washer . . . . .	.25
Porcelain Bowl, Plain, with Doherty Cock	14.00	“ for Bate Washer . . . . .	.70
Rose Jet, Swivel, and German-Silver Valve	4.00	Valve Attachment for Maelstrom . . . . .	.70
Rose Jet	3.00	Valve Jet for Bate Washer . . . . .	.30
		Valve Socket for Bate Washer . . . . .	.70
		Valve Socket for Maelstrom	1.00
		Valve Stem . . . . .	.50

Washers.

For Apparatus, per set	\$0.50	For 1874 Draught-Tube Head, per set	\$0.12
“ Blow-off Cock, Rubber . . . . .	.08	“ 1882 Draught-Tube, per set . . . . .	.10
“ Crystal Fountain, per doz. . . . .	.25	“ Purifier Cock, each . . . . .	.05
“ Double-Action Pump, per set . . . . .	.40	“ Scylla, Spoked Rubber . . . . .	.50
“ Economist Fountain, per set . . . . .	.35	“ Sterling Purifier . . . . .	.10
“ Economist Generator, per set . . . . .	.50	Gasket for Jumbo Generator-Body	10.50
“ Glass Syrup-Jar . . . . .	.05	“ “ “ “ Vitriol-Pot	6.00
“ No. 1 Sterling Generator . . . . .	.50	Hexagon Washer for 1874 Tube . . . . .	.05
“ Nos. 2 and 3 Sterling Generators, per set . . . . .	.37	Packing for Filling Head, Tufts' or Matthews', per doz.	4.50
“ Patent 1869 and Swing-Around Tubes, per set . . . . .	.07	Rubber for Washers, per square foot	2.00
“ 1872 Draught-Tube, per set . . . . .	.12	Rubber Gasket, per pound	1.50
“ 1874 Draught-Tube, per set . . . . .	.17	Syphon-Filler Packing with Metal Tube in Hole . . . . .	.30

Water-Attachment.

Bell Water-Attachment, complete	\$30.00	Electro Band	\$15.00
with Ruby-threaded Globe, same as		Glass Dome for Crescent or Tumbler-	
on Crusader	25.00	Washer	1.50
with Ruby-threaded Globe, same as		Glass Dome for Druggist	2.00
on Baltimore	25.00	" Large	5.00
with Ruby-threaded Globe, same as		Glass Globe, Amberina	5.00
on Georgian	30.00	" Ruby-threaded	7.50
with Amberina Globe, deduct \$2.00		Male Nipple . . . . .	.20
Bell Water-Attachment, without Globe	5.50	Pan for Crescent or Tumbler-Washer	1.50
" " Striker . . . . .	.50	Pipe and Coupling, large, complete	5.00
" " Turbine . . . . .	.50	Silver-Plated Cap, large	13.00
Cap for Crescent or Tumbler-Washer	2.50	Small Water-Tube	1.00

Sundries.

Acorn for No. 1 Crystal Fountain	\$0.25	Gas-Cock Cap, Plated	\$0.40
Apparatus Bolt and Nut . . . . .	.25	" Collar, Plated . . . . .	.20
" Hinge-Bolt and Nut . . . . .	.10	" for Alaska . . . . .	.35
" Screw, Plated . . . . .	.05	" for Radiant	1.50
" Tack-Head . . . . .	.12	" Shank . . . . .	.25
" Wrench . . . . .	.25	Gas-Shade Holder-Tip . . . . .	.50
Ball-Handle for Matthews' Reindeer	2.00	Gas-Tip, Plated . . . . .	.20
Basin for Congress Stand	15.00	Hinge for French Cottage	4.50
Beer-Cock, large	2.25	" for French Cottage, small	2.50
" small	1.25	" for Florida	4.50
Beer Pull-Pump, including Lever-Handles,		" for Standard	1.25
Pipes, and Couplings	12.00	Ice and Cooler-Box, without Coolers	5.00
Beer Pull-Pump, including Pipes and		Ice-Pick . . . . .	.50
Couplings	8.00	Ice-Planer Knives, each . . . . .	.25
Bell Water-Attachment, without Globe	5.50	Ice-Shaver Cog-Wheel, small . . . . .	.75
Block-Tin Syrup-Can for Standard	1.50	Ice-Tongs	1.00
" " for Despatch	2.00	Lamp for Druid	5.00
" " for Statue	3.00	Legs (set) for Ice-Plane . . . . .	.50
" " in Exchange for Old	1.25	Metal Show-Card	5.00
Bonnet for Crescent Stand . . . . .	.75	Monkey-Wrench	1.00
Bouquet-Holder, Flat Bottom	4.50	Nut for Syrup-Can . . . . .	.10
" for Cottage	4.50	Pan for Crescent Water-Attachment	1.50
Cap for Crescent Stand . . . . .	.75	Plate-Holder for Index-Stand	1.50
" for Crescent Water-Attachment	2.50	Plunger for Ice-Shaver	4.50
Cap for Syrup-Bottles, per dozen	1.50	Porcelain Candle . . . . .	.20
Combination-Cock Screw . . . . .	.40	Puzzle Cards, per thousand	3.00
Congress Black-Marble Base	25.00	Railing for Brilliant	50.00
Cover for Glass Syrup-Jar20	Silver-Polish, Price's, per dozen	1.50
Cover-Stop06	Siphon-Filler Spring	2.50
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Cup for Ajax Lemon-Squeezer, Iron35	Soda-Tickets, per thousand	2.00
" " " Silver-Plated	1.50	Spanner-Wrench for Mineral-Tube25
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Drip-Cup for Marble-Slab, large	2.50	Spout to Syrup-Can20
" " small	1.25	Tack-Head, small12
Earthen Jar	1.25	Three-Way Cock	1.00
Gas-Cock for Economist Fountain	2.25	Tongs for Ice-Plane	1.50
" with Tip for Burner	1.00	Valve for Index-Stand	1.25
" without Tip . . . . .	.80	Water-Gauge for Phenix	4.00

SUNDRY SUPPLIES.

SUCH supplies as are not advertised in my Catalogue and Book of Directions, I do not deal in, and cannot accept orders for; but for the information of the trade, I present the following reliable houses, to any of whom orders may be given with safety.

Bottles.

WHITNEY GLASS WORKS, 227 South Front Street, Philadelphia, and 59 Murray Street, New York. Wm. McCully & Co., 18 Wood Street, Pittsburgh. Cunninghams & Co., 26th Street, South Side, Pittsburgh. Wisconsin Glass Co., Milwaukee, Wis. Burrows Bros., Binghamton, N. Y. Hagerty Bros. & Co., 10 Platt Street, New York. Dean, Foster, & Co., 14 to 16 Blackstone Street, Boston. Fox, Fultz, & Webster, 18 Blackstone Street, Boston.

Boxes.

HARRY STEVENS & CO., 22nd and Throop streets, Chicago. George Wilson & Sons, Toledo, Ohio.

Corks.

JOHN ROBINSON & CO., 45 Murray Street, New York. Armstrong Bros. & Co., 24th and Railroad streets, Pittsburgh.

Engines.

CHAS. P. WILLARD & CO., 284 Michigan Street, Chicago. New York Safety Steam Power Co., 30 Cortland Street, New York.

Labels.

WITTEMAN BROS., 192 Fulton Street, New York, and 73 Blackstone Street, Boston.

Lightning Stoppers.

HENRY W. PUTMAN, 108 Chambers Street, New York.

Marble Dust.

W. G. NASH, 220 State Street, Boston. Union Mills, 454 Cherry Street, New York. Newburgh Marble Dust Works, Newburgh, N. Y. G. W. Smith, Dayton, Ohio.

Patent Stoppers.

W. H. HUTCHINSON & SON, 196 So. Desplaines Street, Chicago; 60 Park Place, New York. Stewart Bottle Stopper Co., 18 Rose Street, New York.

Second-Hand Bottles.

W. LYNCH, 161 Causeway Street, Boston.

Sulphuric Acid.

COCHRANE CHEMICAL CO., 55 Kilby Street, Boston. Martin Kalbfleisch's Sons, 55 Fulton Street, New York. Marsh, Harwood & Co., 309 Hamilton Road, Cincinnati; Cleveland; St. Louis.

THE following papers are published in the interest of the bottling trade, and in every issue contain much important information together with the advertisements of all the prominent houses that offer bottling supplies. Specimen numbers will be sent by the publishers on application: —

The National Bottler's Gazette, 21 Park Row, New York.

The American Carbonator, 39 Nassau Street, New York.

The Western Bottler, 45 So. Clinton Street, Chicago.

The National Press, 219 Fulton Street, New York.



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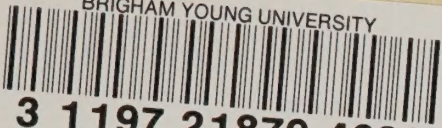
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